

ARCHITECTURE DEPARTMENT

MASTER OF ARCHITECTURE PROGRAMME

CHINESE UNIVERSITY OF HONG KONG

2003-2004

DESIGN REPORT



THE LINEAR CITY

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April 2004



Introduction

My Thesis is about reorganizing the relationship between open space and housing in the site above Fo Tan KCRC Railway Station and the KCRC Depot. It is started with exploring how open space and architecture are organized along different lines in the city. Those lines are included street, boulevard, river, wall and railway, which are potentially cutting the city fabric and secondary connections such as bridge or subway is necessary to connect the disconnected fabric. Urban strategies on how open space organized along the lines are learned from them and ideas are applied to the disconnecting condition created by railway in Fo Tan.

During the design process, different type of open spaces are defined. Four types of open space - the Roof Garden, the Plaza, the Commerical Courtyard and the Residential Courtyard are defined in the final design. They are densely packed together and with a close relationship to the residential development. Finally, new way of living in the Courtyard Housing and Slab Housing are provided above the railway.



Content

(a) Introduction

(b) Research

1. **Boulevard** in Paris
2. **Street** in Rome
3. **Railway** in Boston
4. **Railway** in Tokyo
5. **Wall** in Beijing
6. **Canal** in Amsterdam

(c) Design

1. **Site Study** Fo Tan
2. **Design Process**
 - [01] - **Conceptual Idea**
 - [02] - **The Design Development**
 - [03] - **The Final Design**

Research

Precedent on **LINES & OPEN SPACE**

Boulevard in Paris

Street in Rome

Railway in Boston

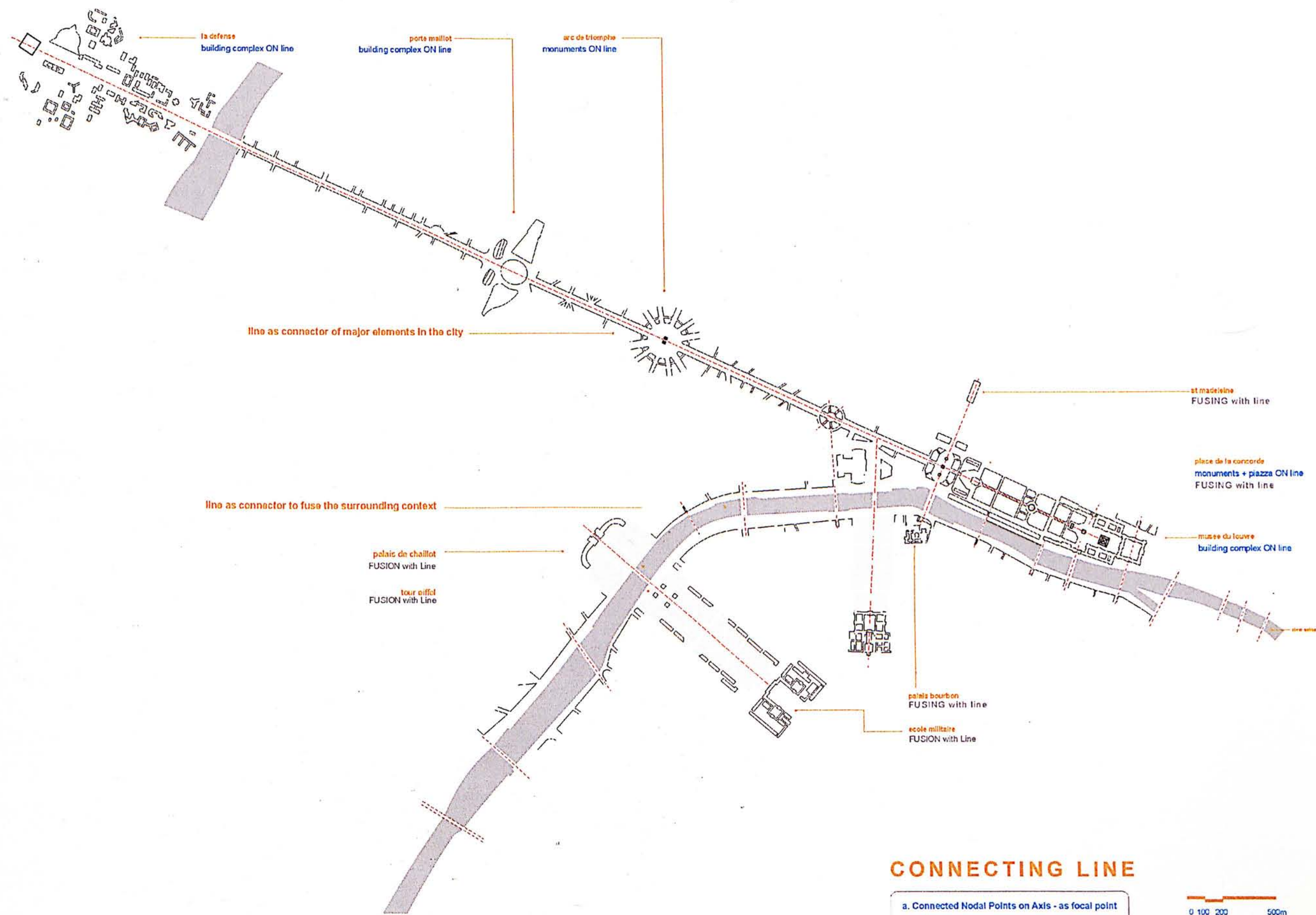
Railway in Tokyo

Wall in Beijing

Canal in Amsterdam

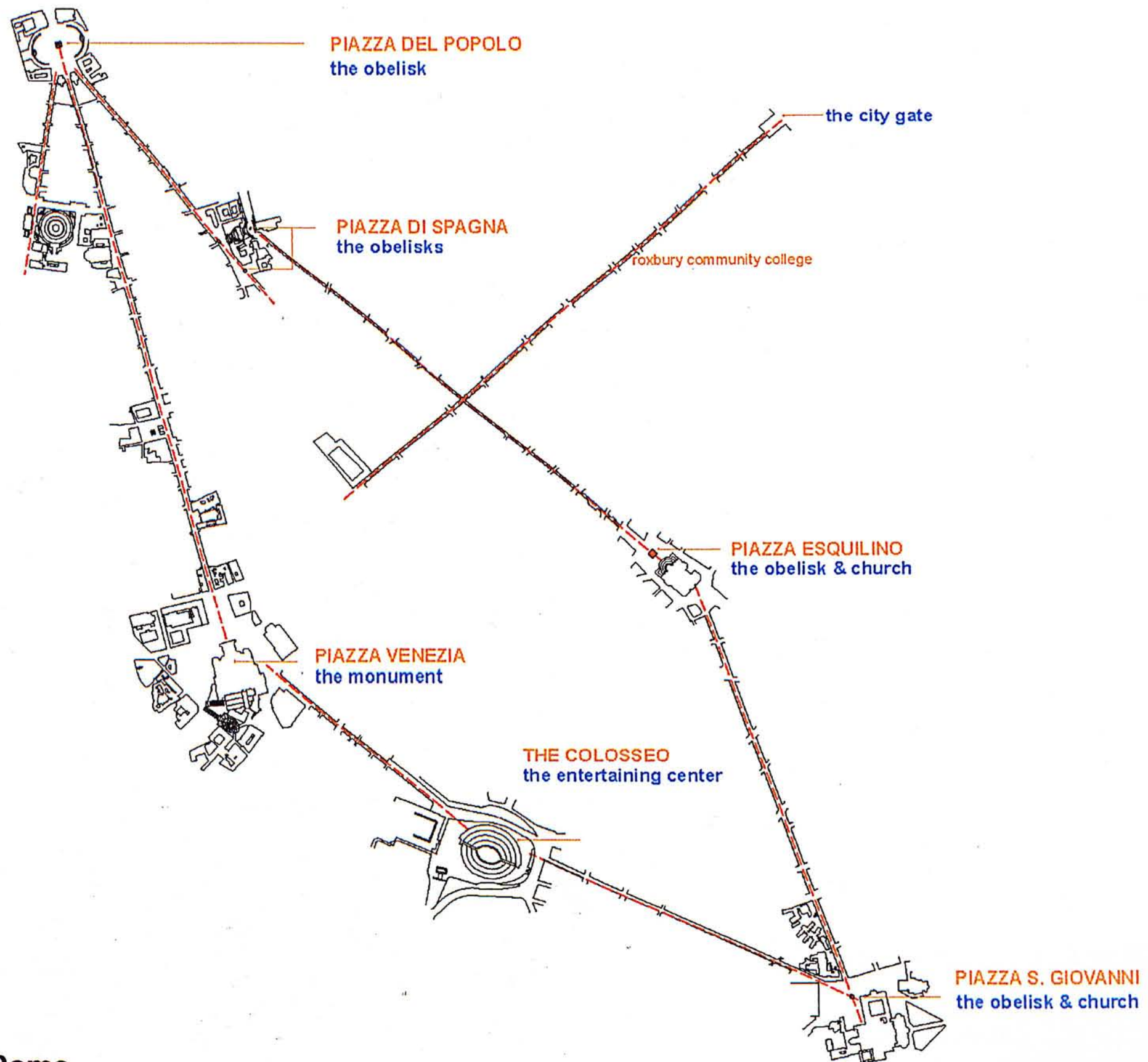
Paris

Open Space intersect with Boulevard

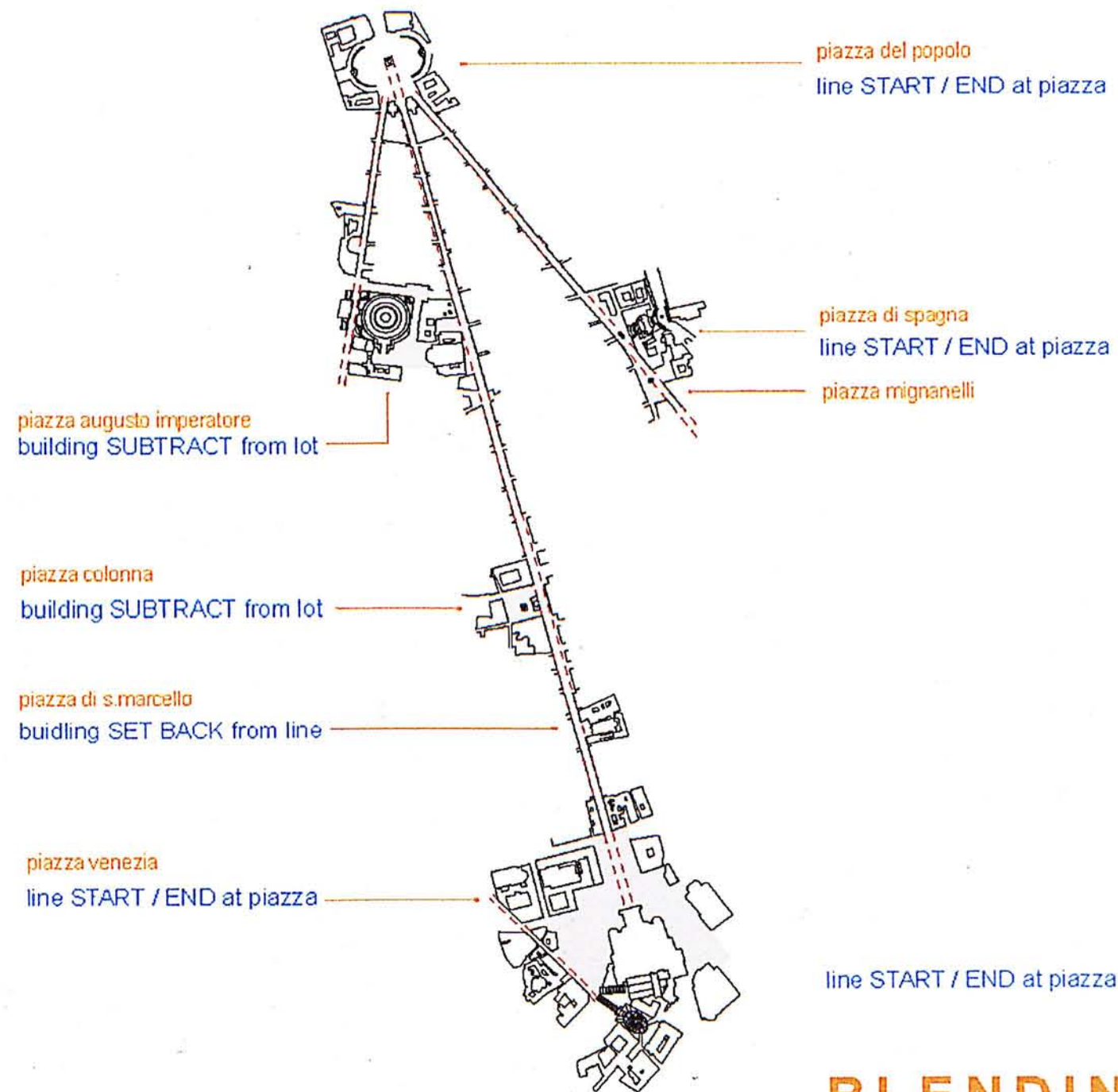


Rome

Open Space along Street



Major Open Space In Rome



line START / END at piazza

BLENDING LINE





a. Piazza merged as part of the line

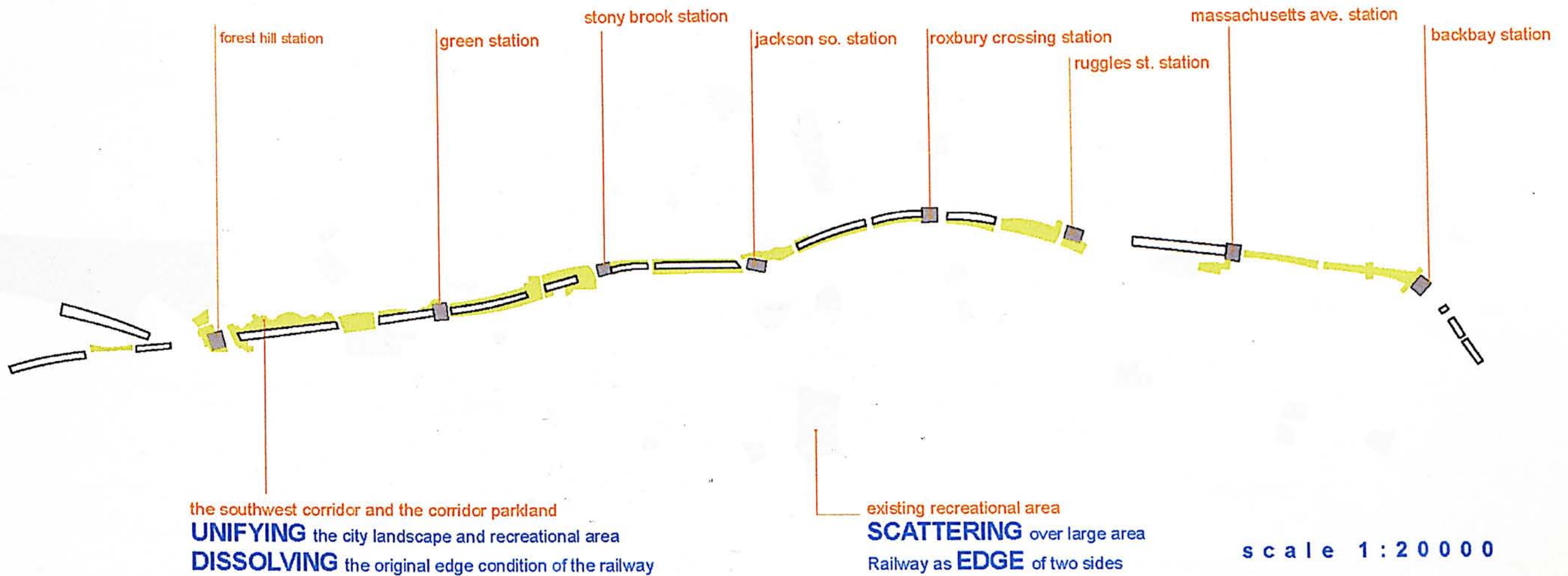
Boston

Open Space linked up space along Railway

Southwest Corridor, Boston

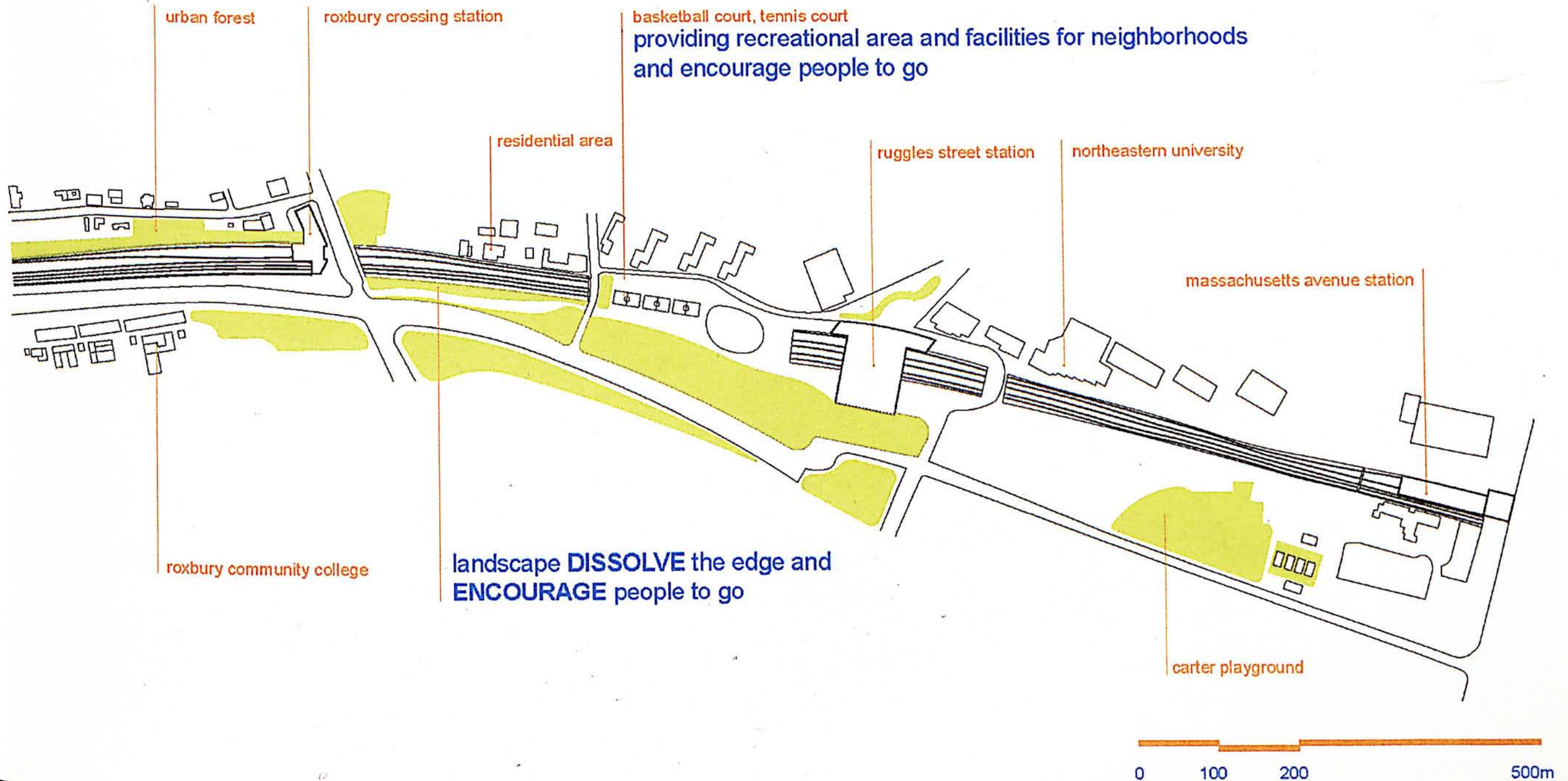
unifying the scattered recreational area of the city

-  open trackway
-  the station
-  southwest corridor parkland
-  existing landscape and recreational area



Southwest Corridor, Boston

dissolving the edge



Southwest Corridor, Boston

Line as linkage

Properties

- integrate to surrounding context
- allow linkage to other place
- allow staying and meeting

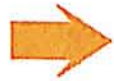
surrounding neighborhoods

corridor parkland

linear form
(the railroad)

+

edge articulation
(the landscape)



joining the dispersal
neighborhood together

by combining

efficiency use of space
spatial integration
programmatic integration
dissolve the sharp edge



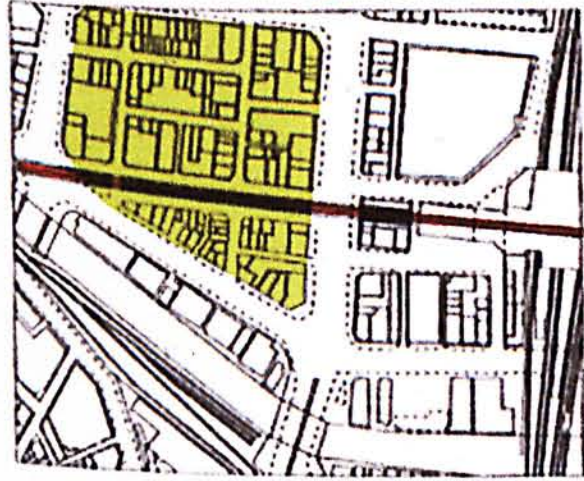
Japan

Open Space attach to Railway

Sotokanda, Tokyo

line as center

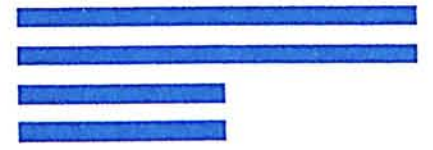
line penetrate through to the city fabric



the expressway cutting through the fabric

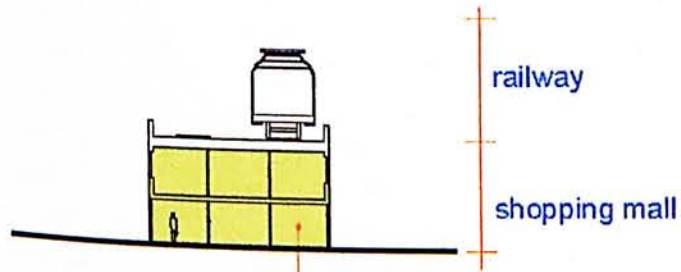
by inserting

efficiency use of space
spatial integration
programmatic integration
dissolve the sharp edge



efficiency use of space

insertion of building directly under the elevated railway structure



shopping mall built under elevated expressway,
using the existing via-duct structure

scale of section 1:500

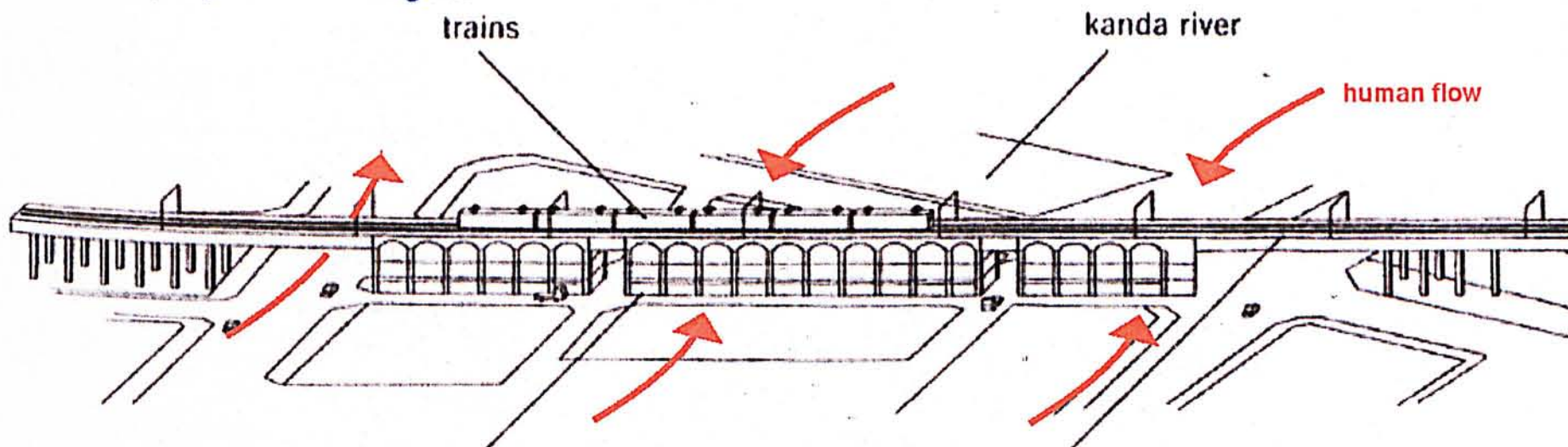
programme as center

connecting people to the cutting line

trains

kanda river

human flow



electrical goods shopping

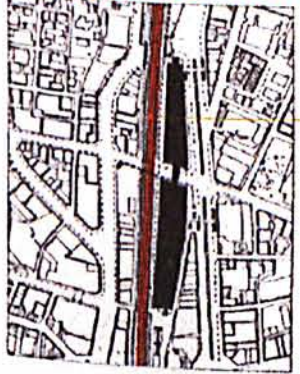
sobu railway line



Shibuya-ku, Tokyo

line as path

line penetrate through to the city fabric



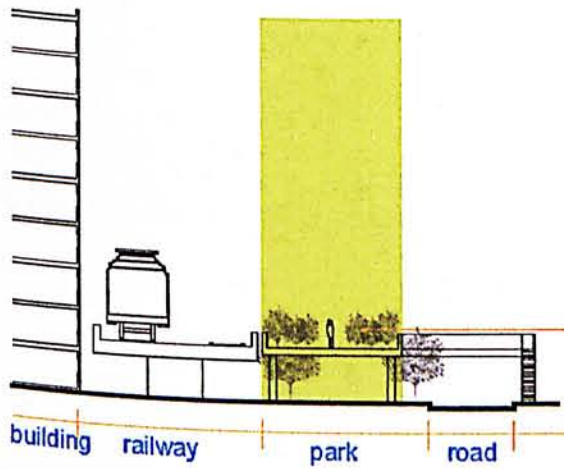
purely moving system which cut the fabric

by attaching

efficiency use of space
spatial integration
programmatic integration
dissolve the sharp edge



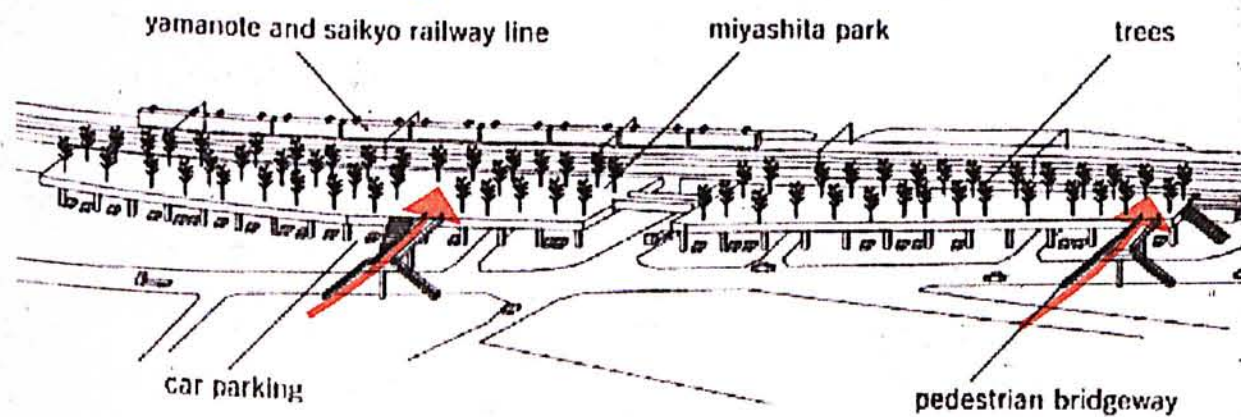
architectural element to dissolve edge



landscape - soft edge to dissolve the sharp edge of railway
- as buffer zone to the railway zone

scale of section 1:500

programmes encourage human flow to that area



human flow



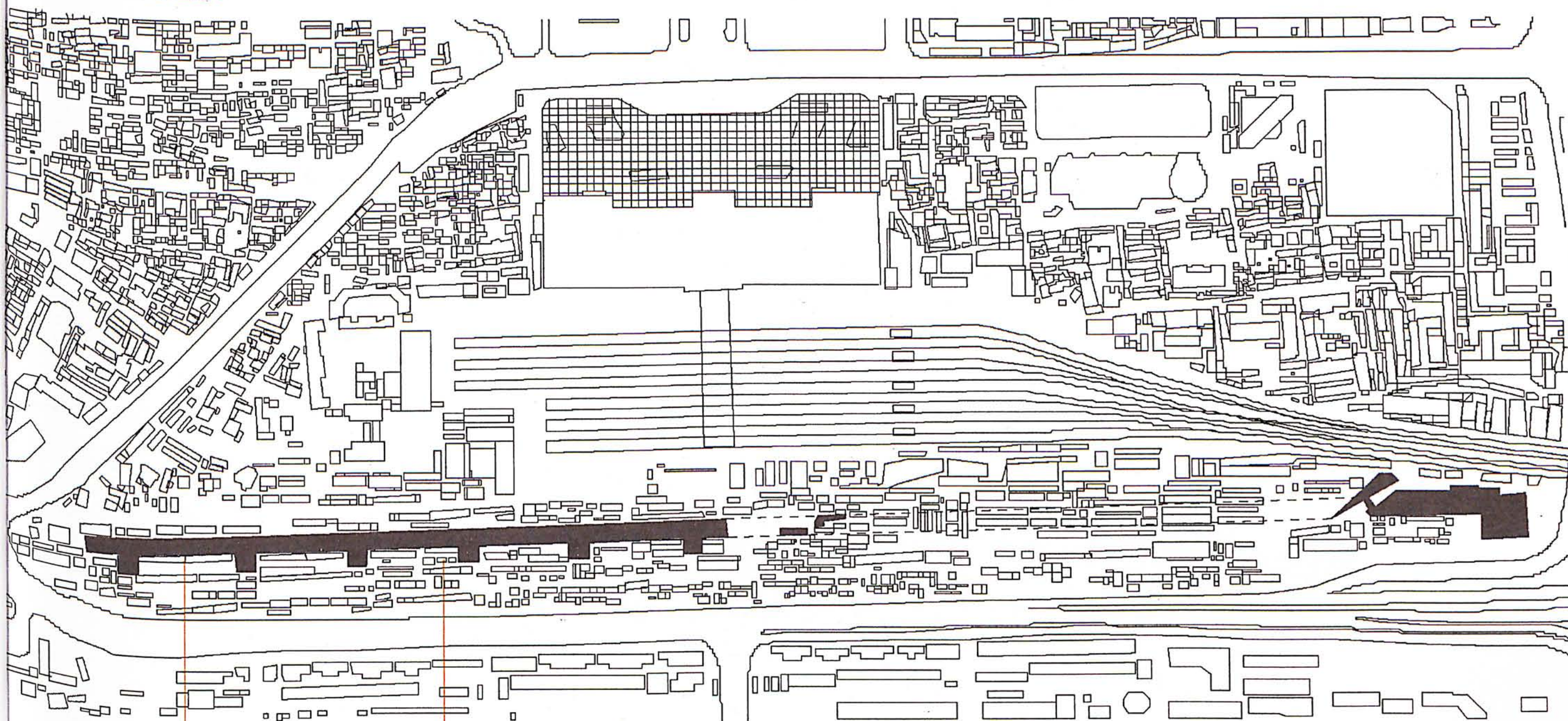
Beijing

Open Space merge the existing Wall

Dong Bian Gate, Beijing

dissolving the edge - by insertion of programme

before 2001



residential area attach to wall

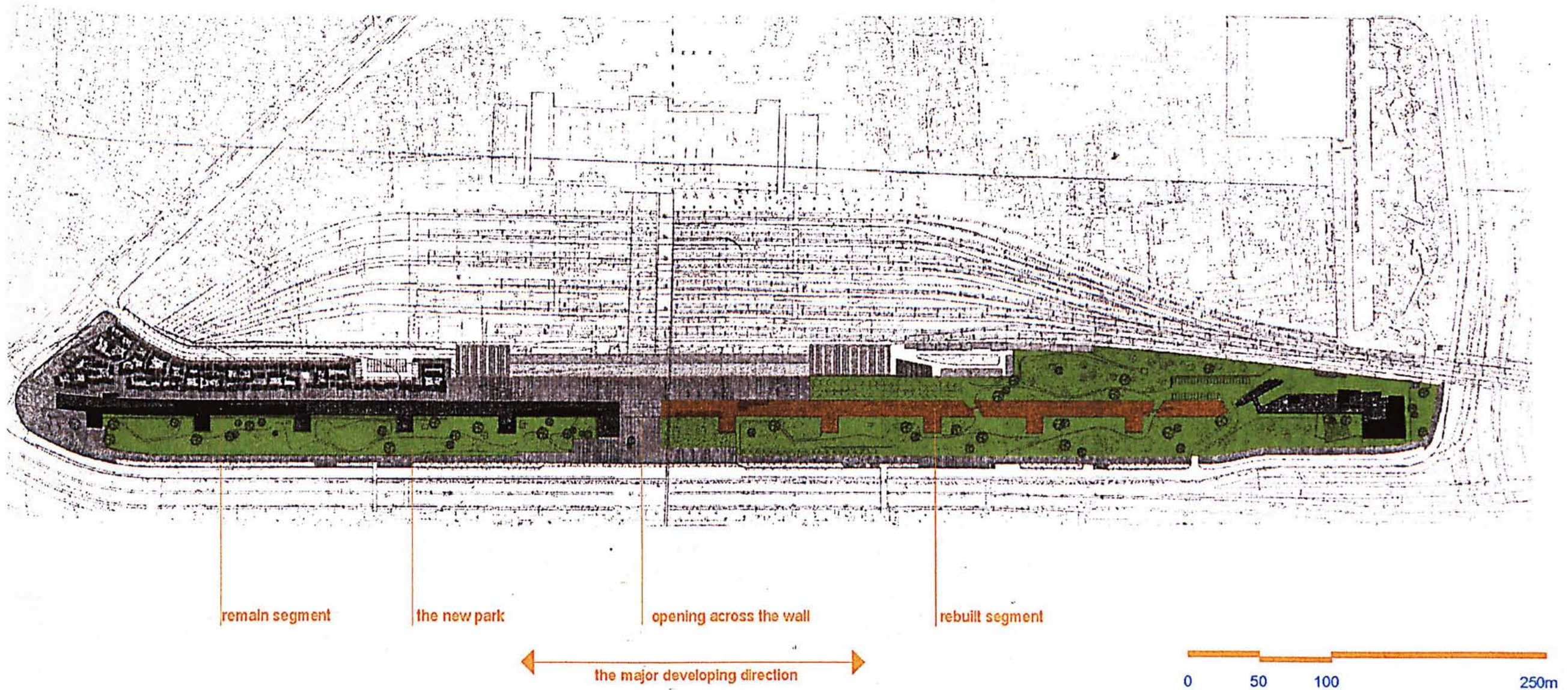
the hutong spread along the wall in linear form and direction
most of them has the longest side facing the wall

the major spreading direction



rebuilt the destroyed segment of wall, revitalize it as a separator in the city
after 2001

efficiency use of space	<div></div>
spatial integration	<div></div>
programmatic integration	<div></div>
dissolve the sharp edge	<div></div>



Amsterdam

Private Open Space along River
Private Open Space in each Residential Unit

edge of river / canal

housing development at borneo / sporenburg, amsterdam

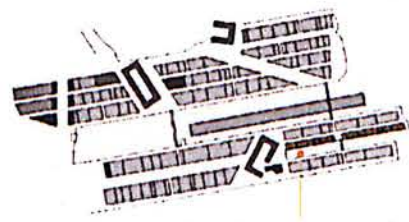
river define a new housing type along the edge

housing affect by the linear form of canal

- most of them have drop off area located along the bank of canal
- compression of 57 housing units in linear shape along the canal edge

housing could be a nodal point between living and travelling,
architecture lies at the intersecting and interchange point rather than a terminal position

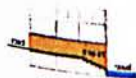
- accessibility between line and architecture - high and directly
- each house acts as a private station



articulation of two extreme scale
small scale housing unit and large scale canal



housing integrated with parking set back to create drop off area



detail study 01

detail study 02



drop off entrance

addition of pier as drop off

living room as direct drop off area

addition of pier as drop off

ladder as drop off

addition of pier as drop off



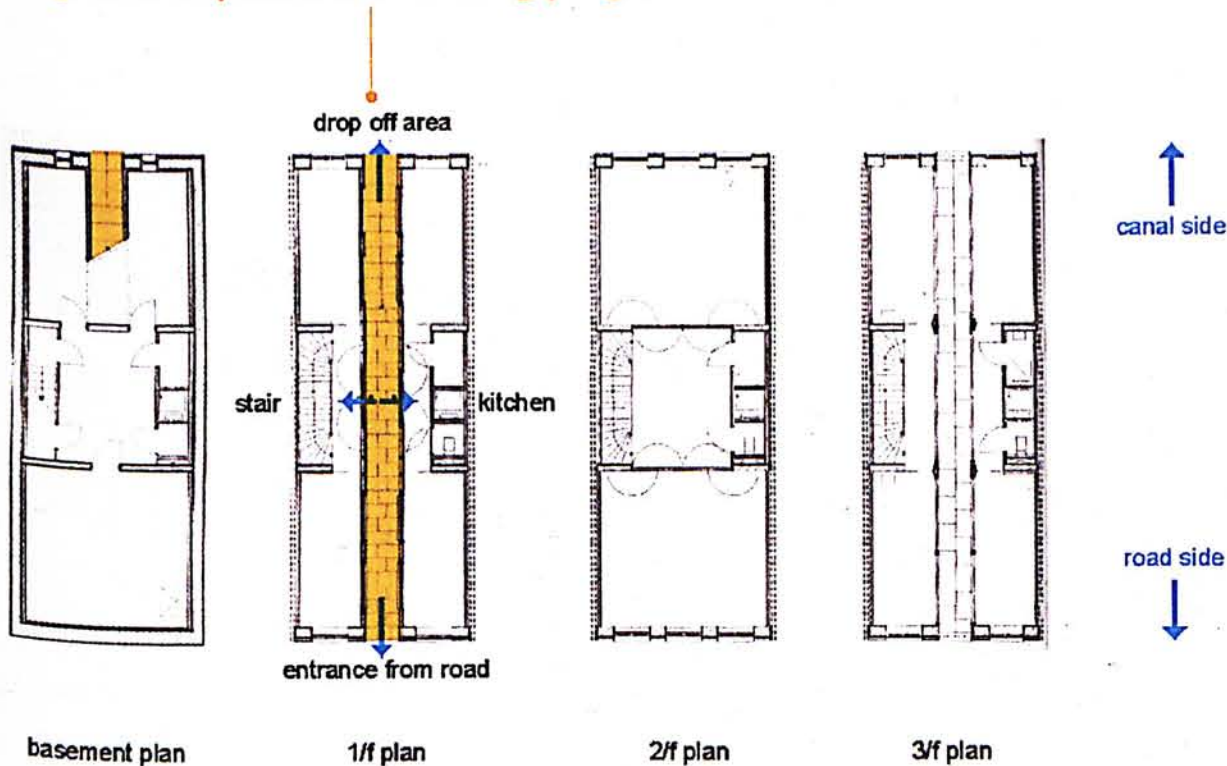
main circulation space

edge treatment

the main circulation space, directly open to canal
main circulation as pier of drop off area
the drop of as part of the housing programme

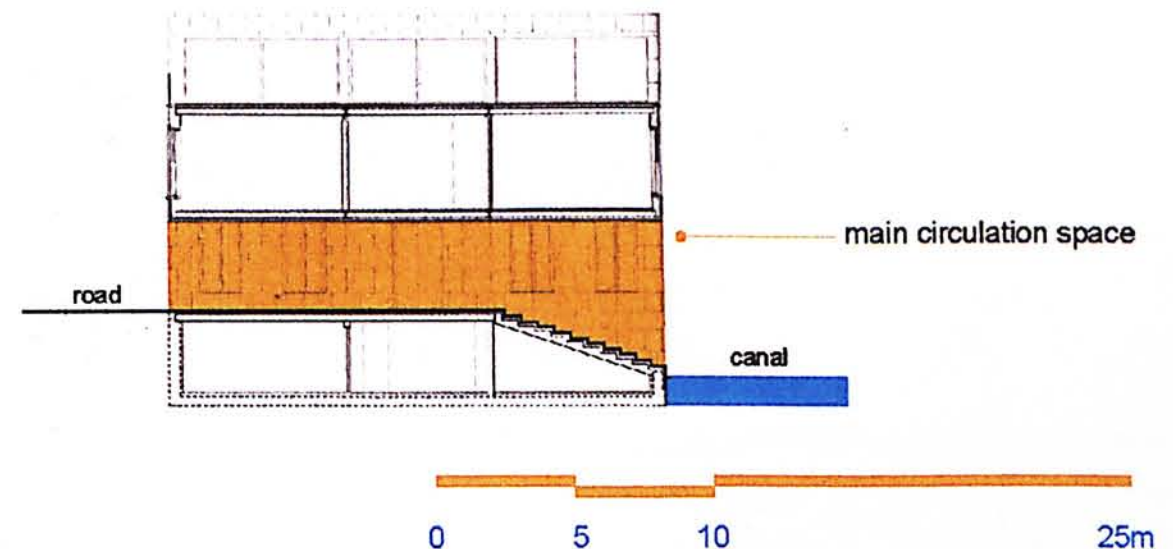
dissolving of edge

entrance of house directly open to river embankment (the edge of line)
integrated as part of the housing programme



detail study 01

santen house, by rapp & scheulen
house as transportation terminal (living + traveling)



detail study 02

house willemssen, by faro architecten bv
house as transportation terminal (living + traveling)



living room

addition of pier as drop off

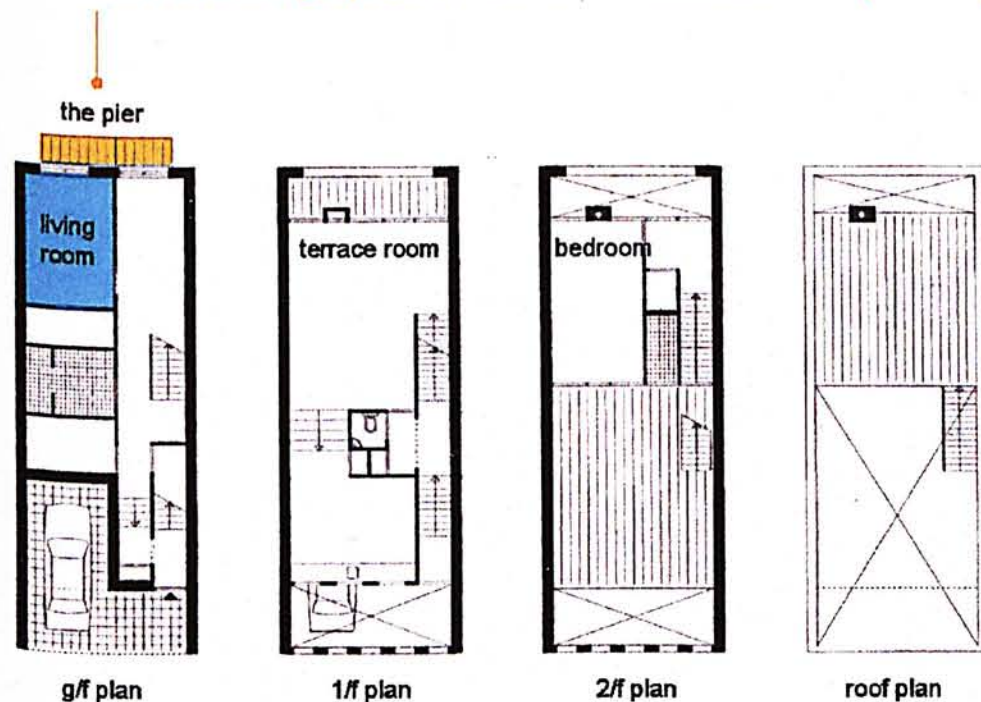
edge treatment

attach with pier

living room directly connect to pier and the canal (major line in amsterdam)

dissolving of edge

extension of living space to the river embankment (the edge of line)



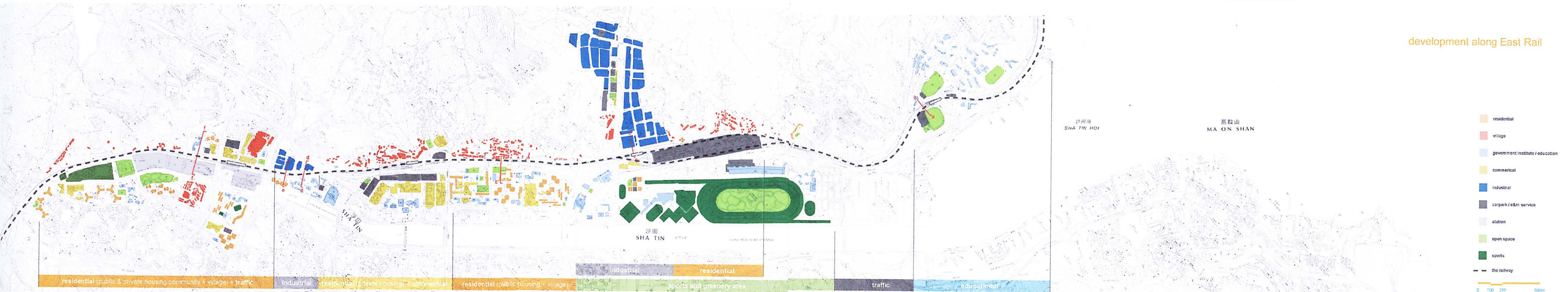
Site Study Fo Tan

Programme Study along East Rail

The East Rail

Railway is chosen as an experimental ground for testing my idea of line in the situation of Hong Kong. In 1999, the Hong Kong announced the 'New Transportation Strategy' stating that 'Railway will become the main means of transportation in our territories and 70 % of the population and 80 % of the employment will fall along the railway catchment area. Residential development along railway will be more and more important.

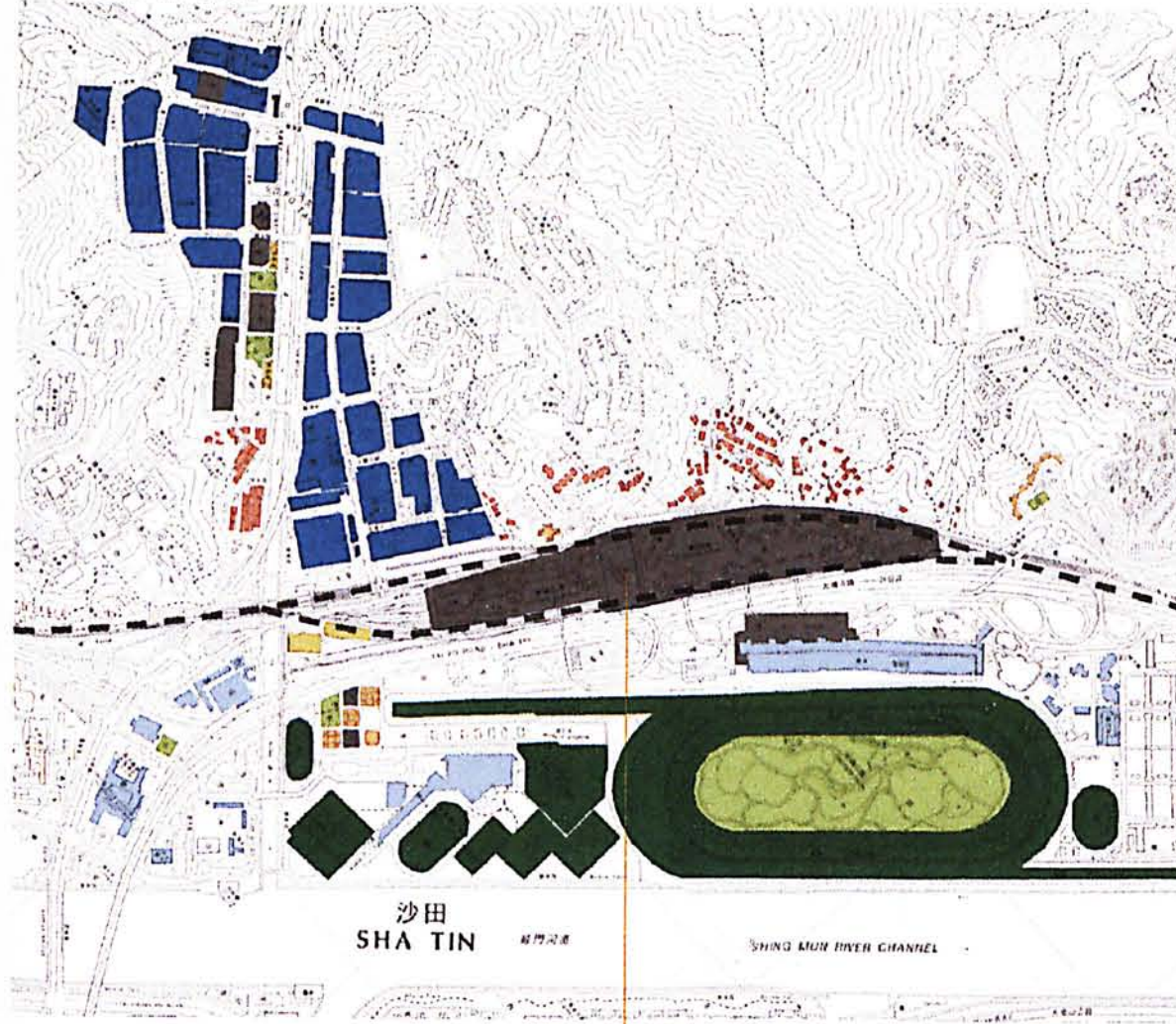
Two railway lines, the East Rail in the Shatin district are chosen for carrying out the typology study. The East Rail came into service since 1910 running from Hung Hom through the New Territories to Lo Wu. Programmes exist along the segment within the Shatin District will be studied.



Programme Study in Fo Tan District

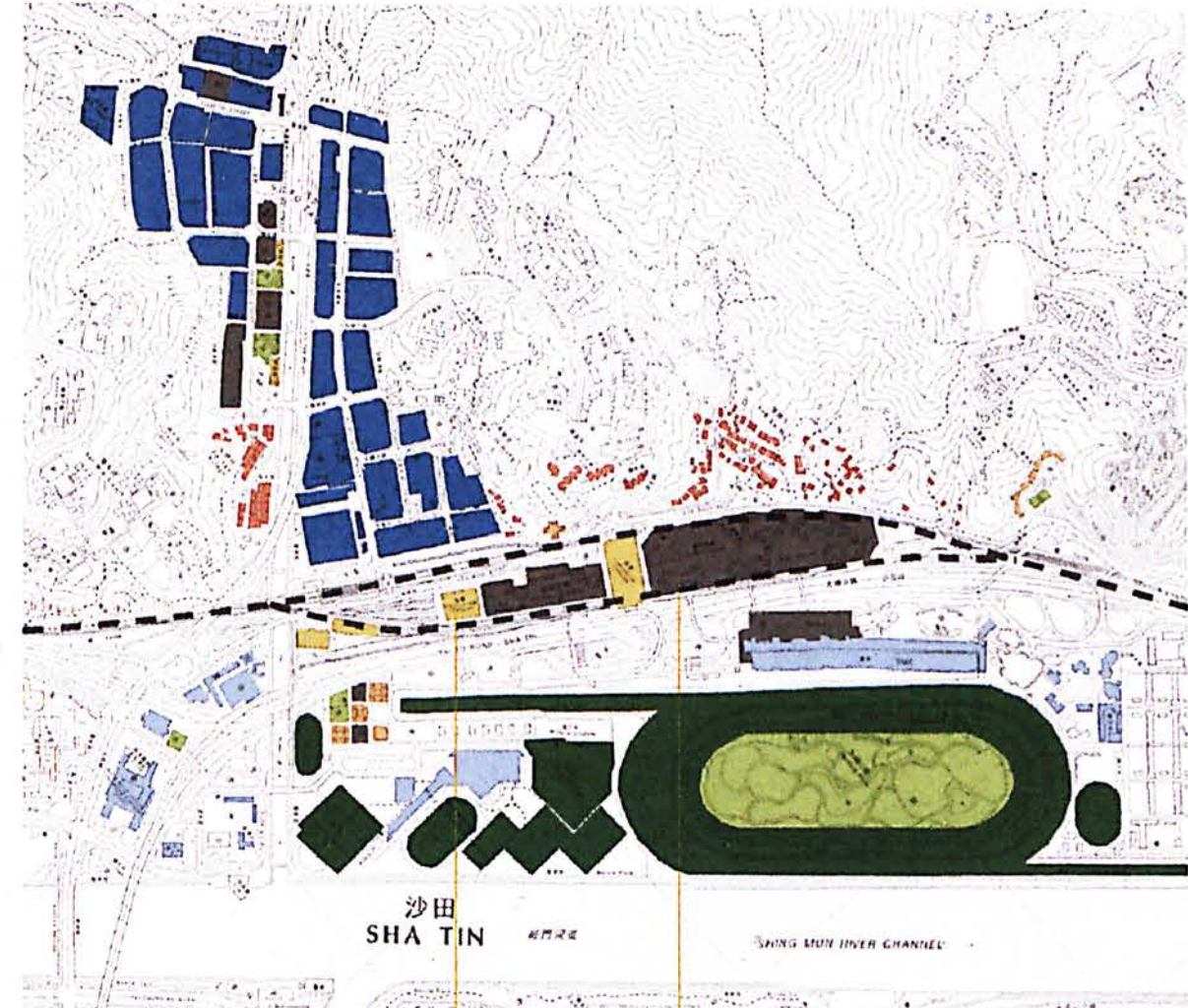
programme study at 'split location'

programme at +7.3m



the krc depot

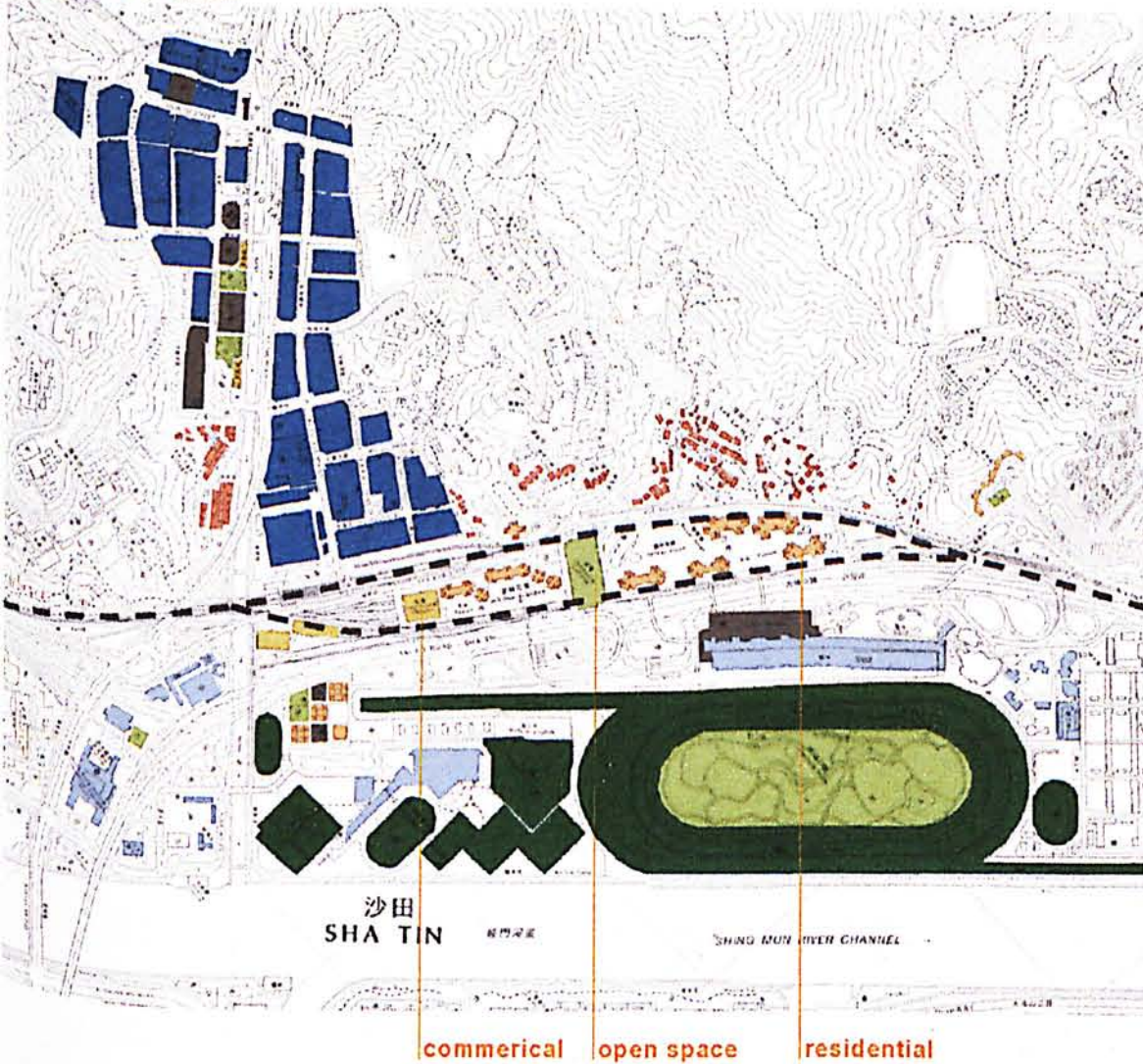
programme at +16.3m



commerical

carpark

programme at +23.8m



fo tan station

ground type
district type

elevated
open space / building

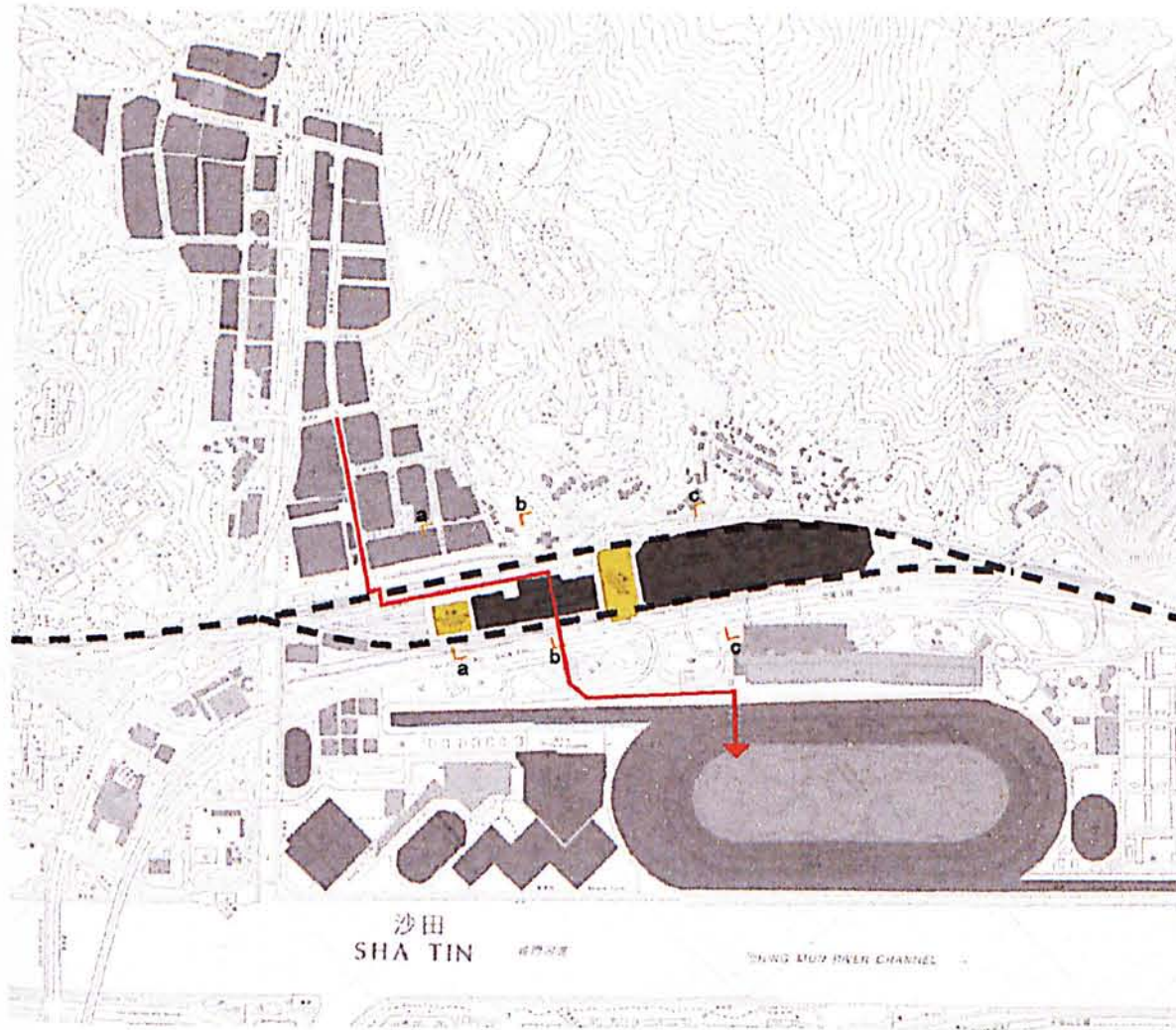
- residential
- village
- government institute / education
- commerical
- industrial
- carpark / service
- station
- green space
- entertaining facilities
- the railway

the podium in-between
the 'split' line



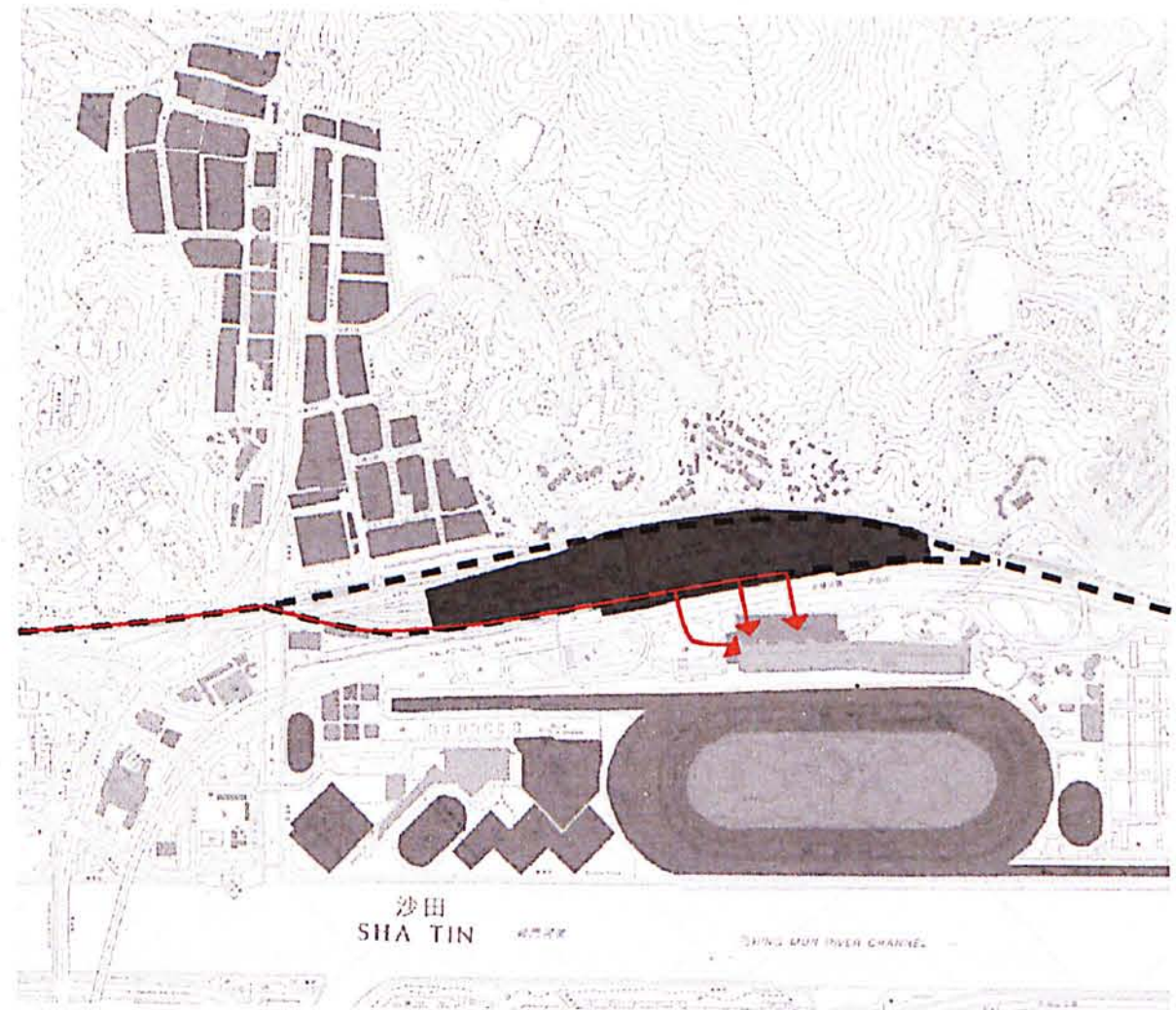
Existing Connection Study

CONNECTION in relationship to TIME



existing connection 01 penetrate the carpark of jubille garden at podium level
at level +16.3m (the podium level)

the route opens daily



existing connection 02 go to the kcr racecourse station and using the bridge provide at the station
at level +7.3m (the depot level)

the route opens on horse racing day only



the racecourse and the penfold park

major connecting bridge
(open daily)

the kcrc depot



connection from racecourse station
(open on horse racing day only)

the kcrc depot is the **major disconnecter** between the industrial area and the recreational area at fo tan

Residential Unit on Site

Jubilee Garden



basic Unit: 2-bedroom unit and 3-bedroom unit

area of unit	no of units
44.8 m ²	890
65.3 m ²	890

Royal Ascot



Phase 1

Basic Unit: 3 types of 3-bedroom unit

area of unit	no of units
71.5 m ²	366
82.2 m ²	366
162 m ²	366

Phase 2

Basic Unit: 2 types of 3-bedroom unit

area of unit	no of units
112.7 m ²	576
120.6 m ²	576

Total no of Units = 4030

Average Unit Size = 100 sq. m

Existing Carpark

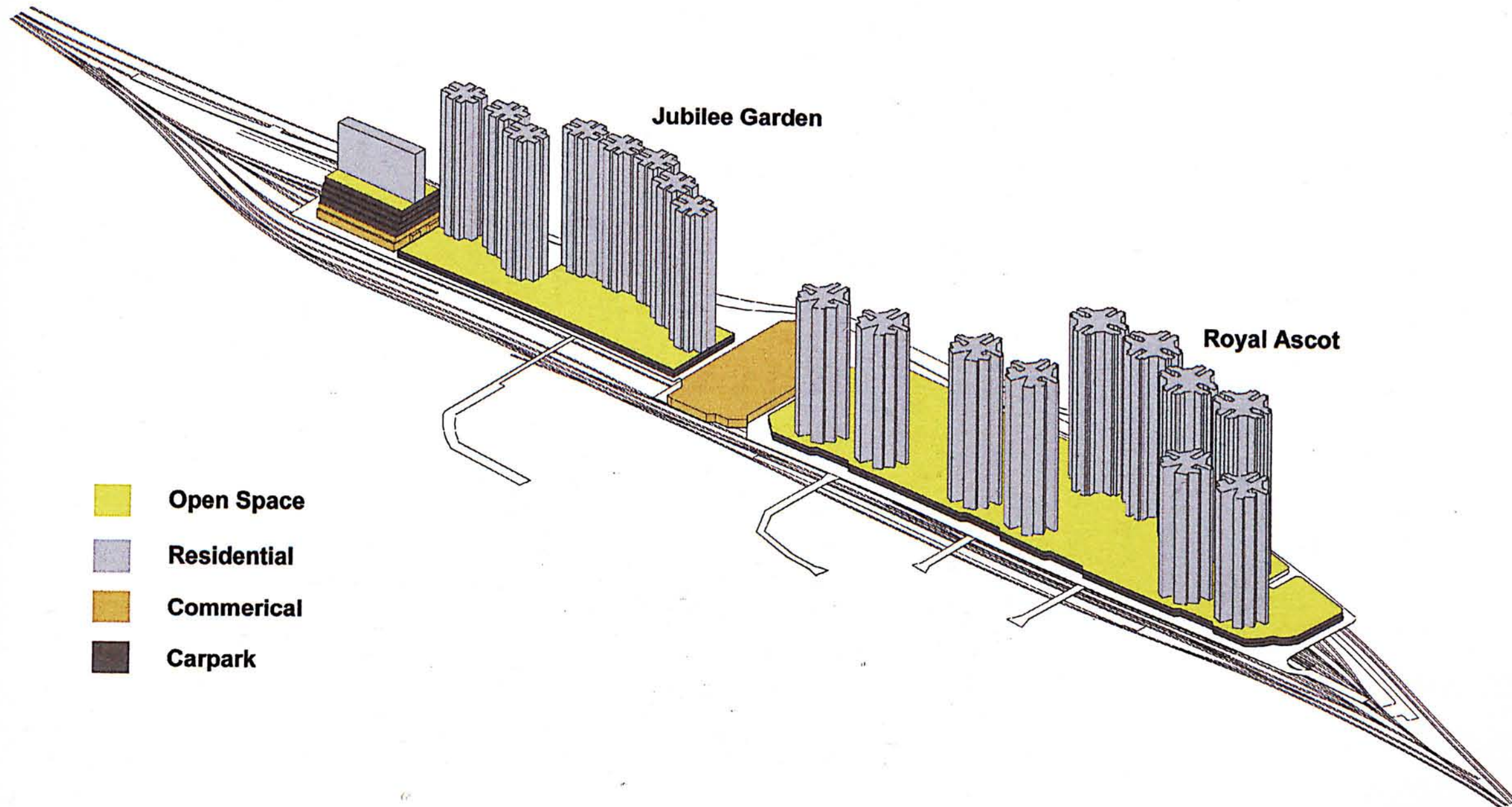
80% of total number of housing units

Residential Population

12922 (from HK Census 2001)

Domestic Household number = 3.1

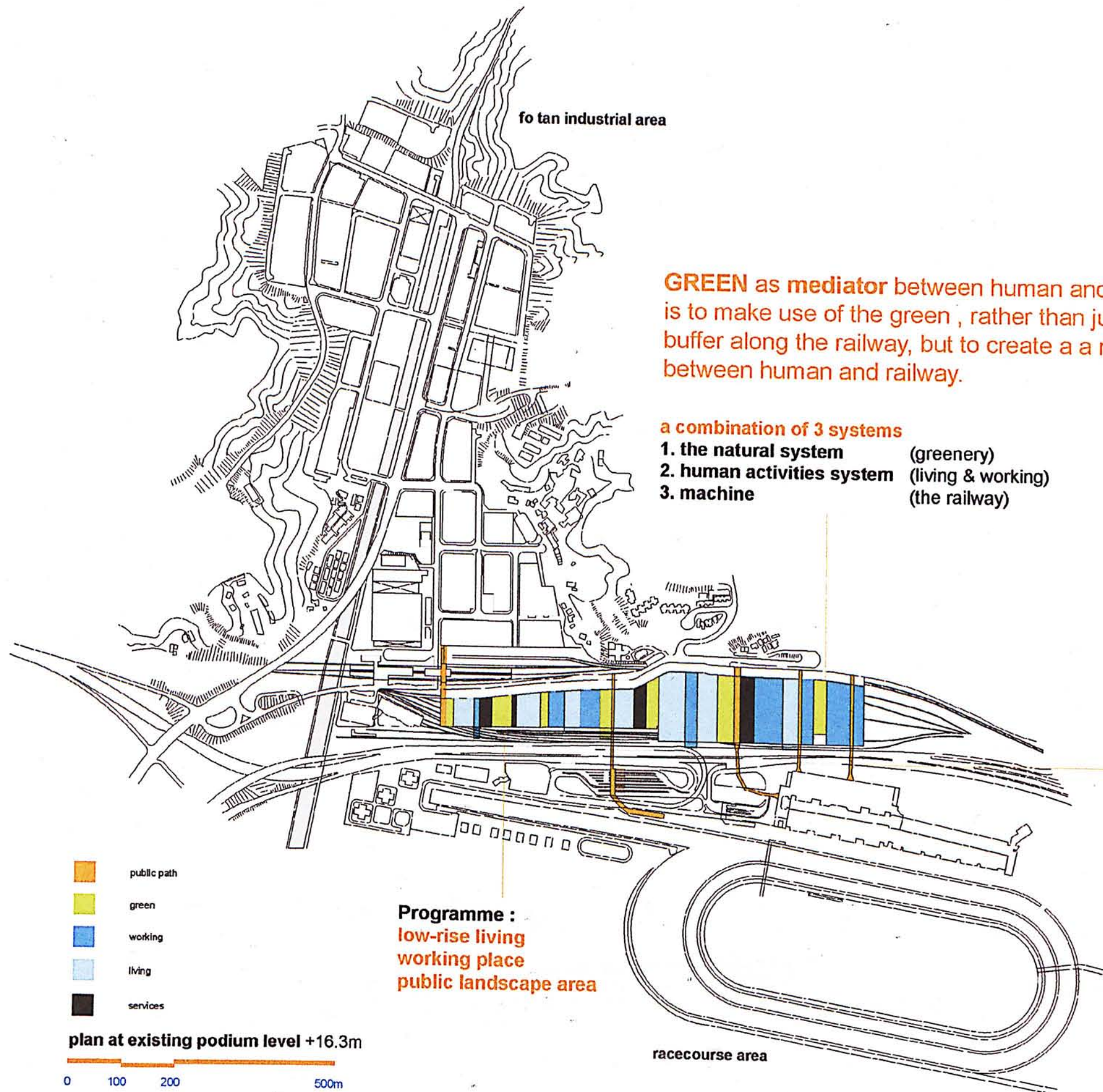
Open Space and Residential Unit Relationship



Design Process

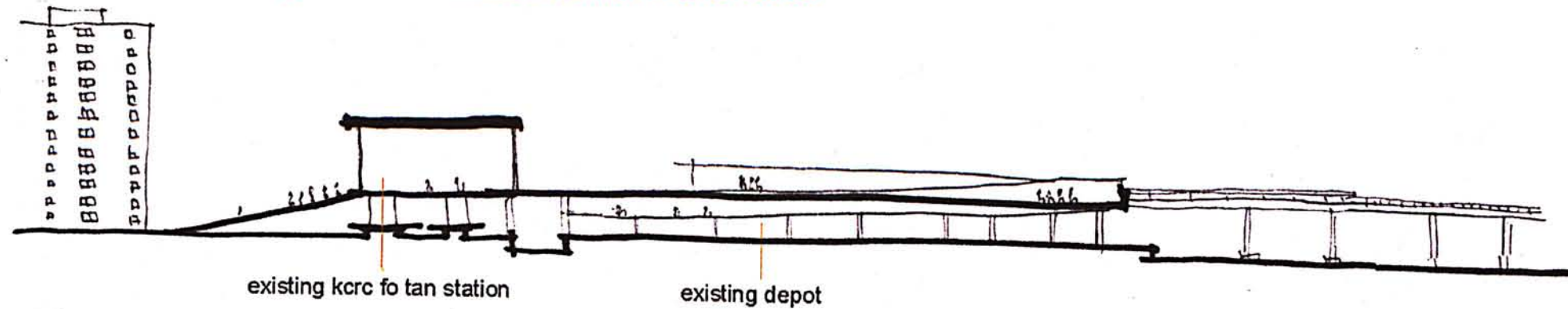
[01] - Conceptual Idea

Open Space to reconnect the fabric on both side of railway



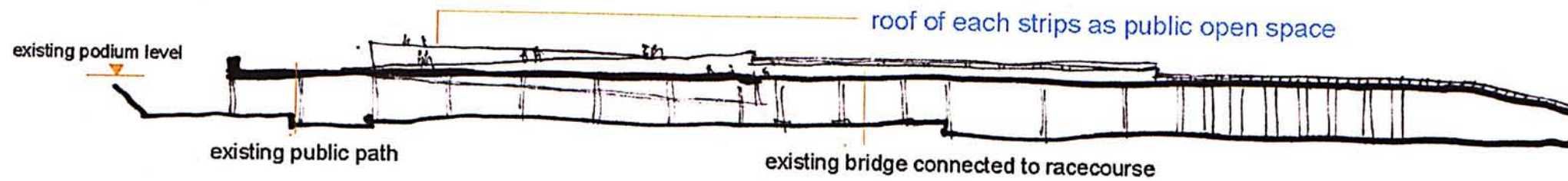
direct connection through fo tan station to industrial area

section aa



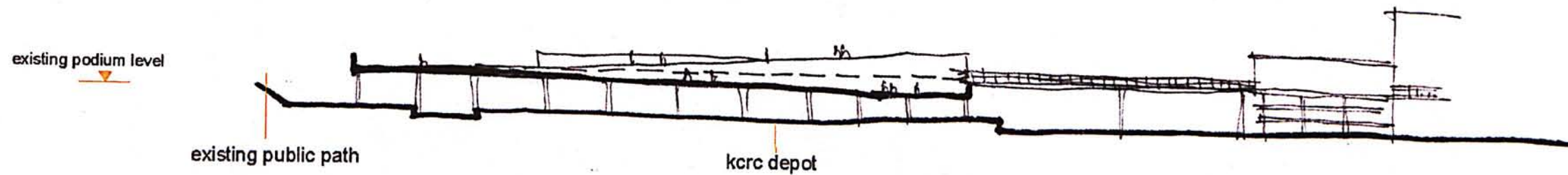
direct connection from bridge to existing public path

section bb



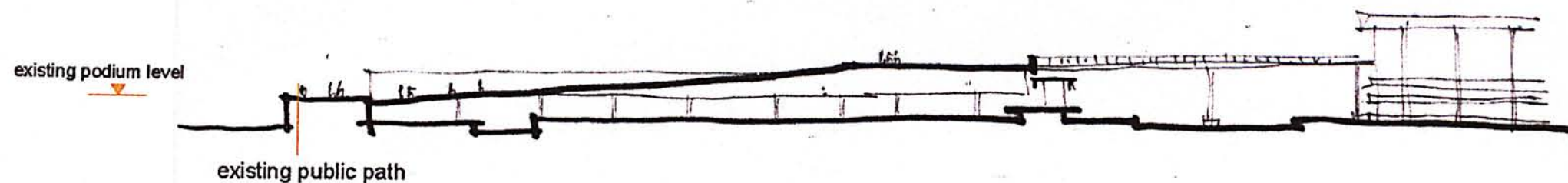
connection from existing public path level to krcr depot level

section cc

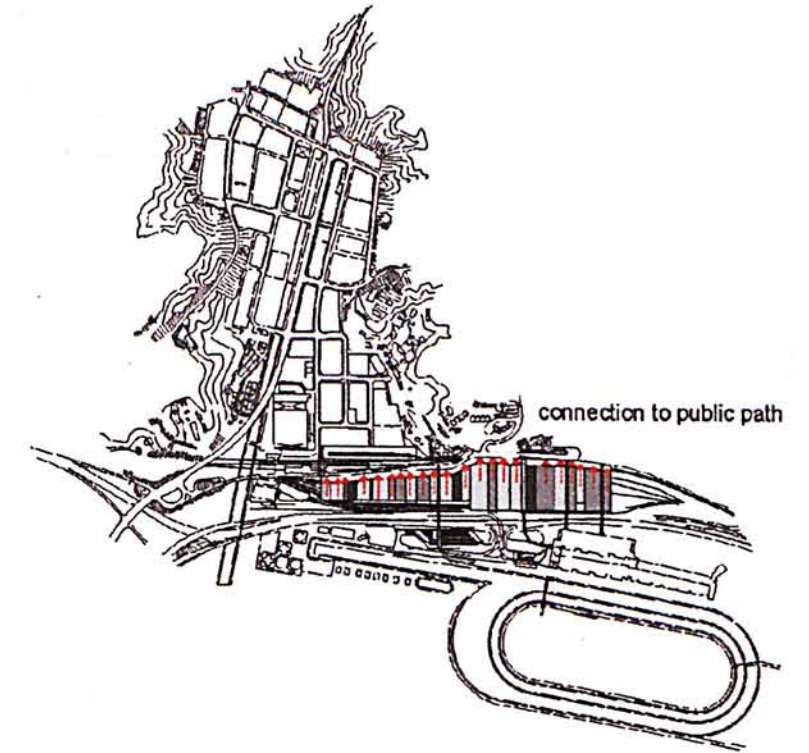


connection to existing public path

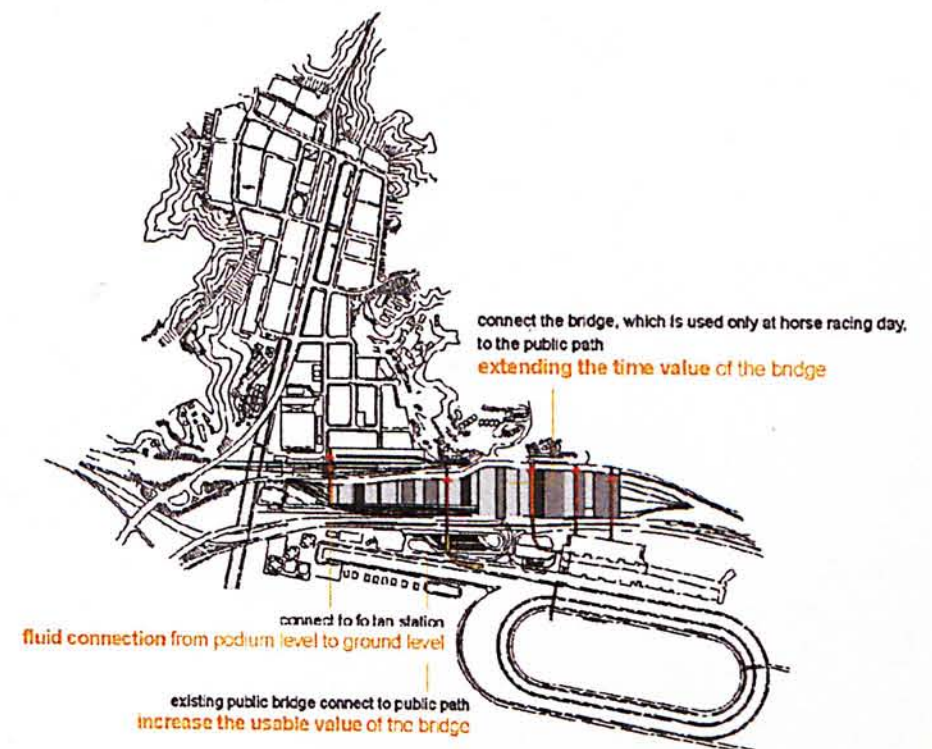
section dd



strips connect to public path
create an open edge



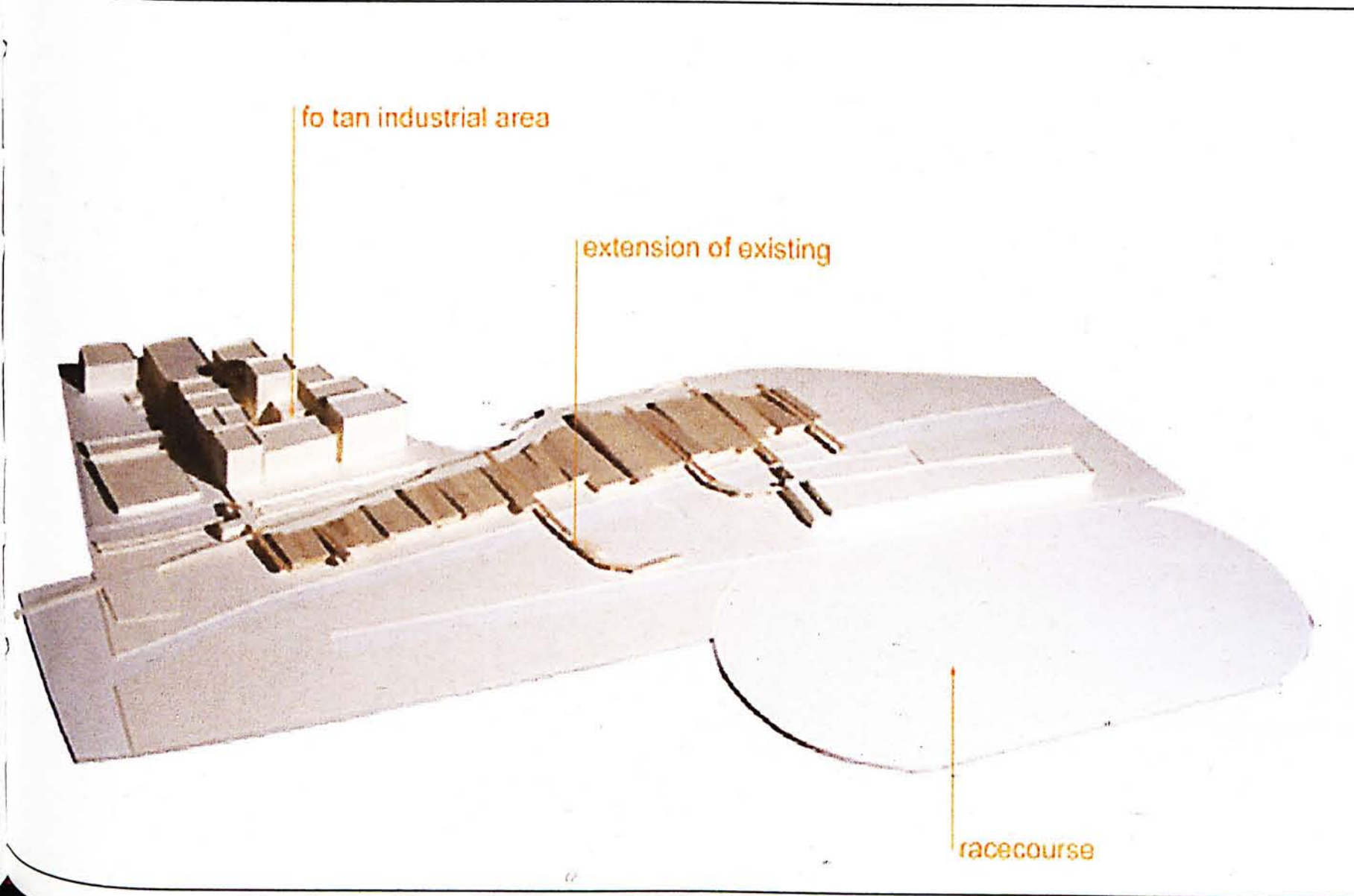
extend the existing bridge as one of
the strip



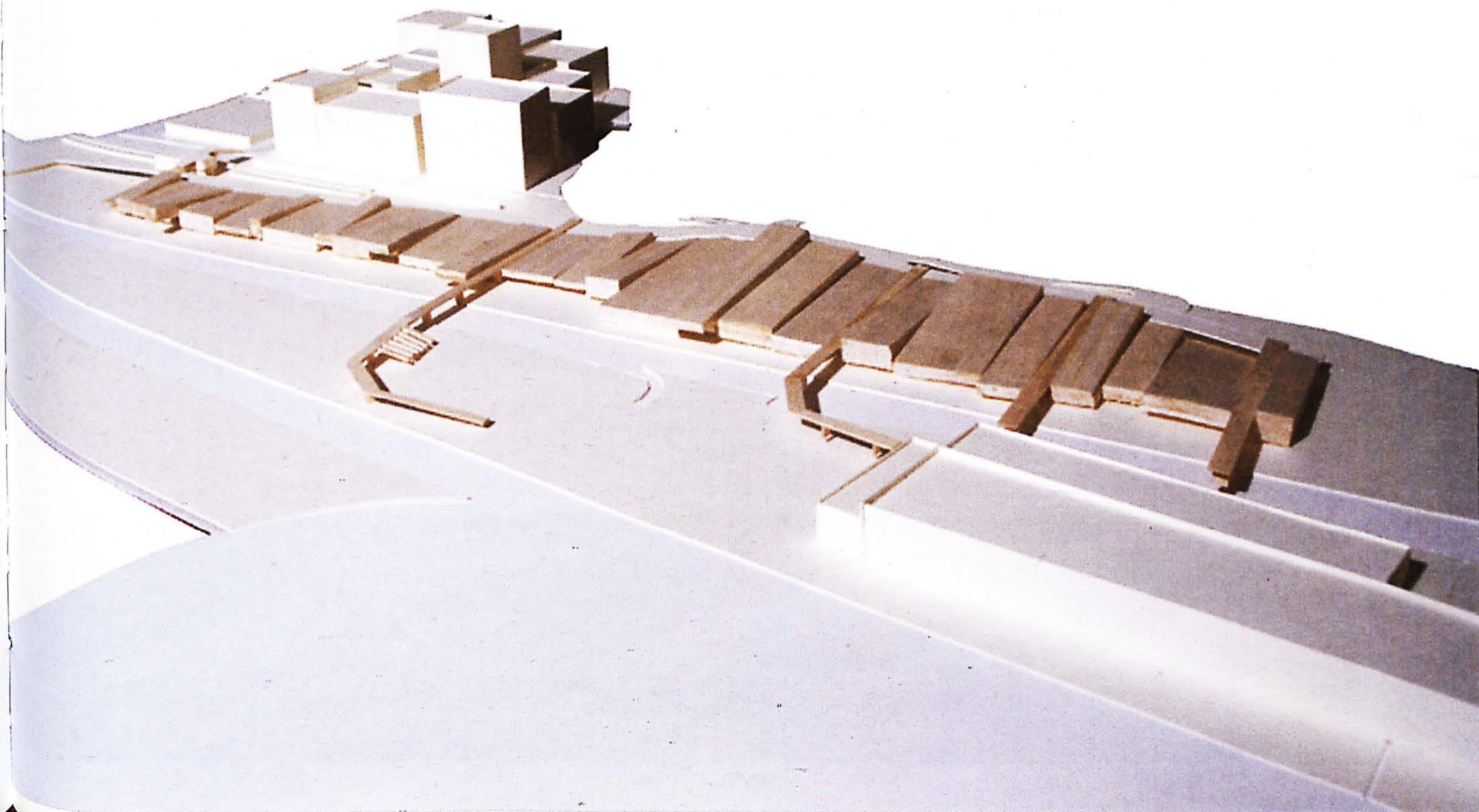
fo tan industrial area

extension of existing

racecourse

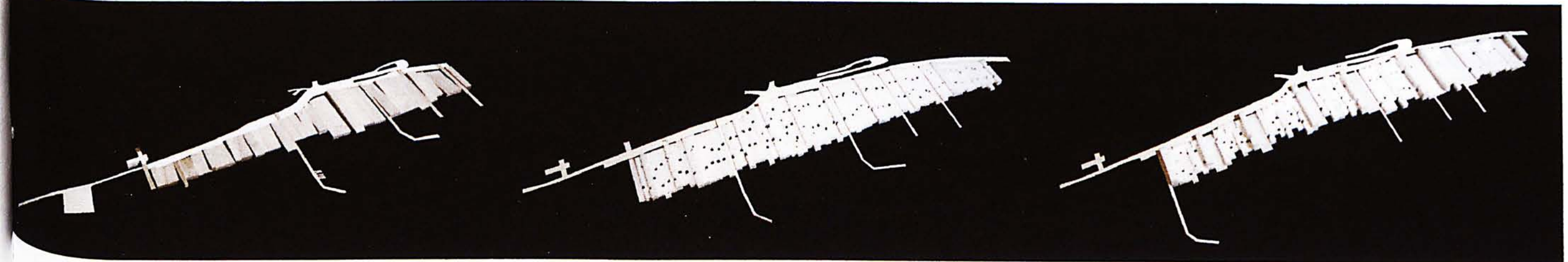


Site Model 1:1500



[02] - the design development

Manipulation of open space & housing



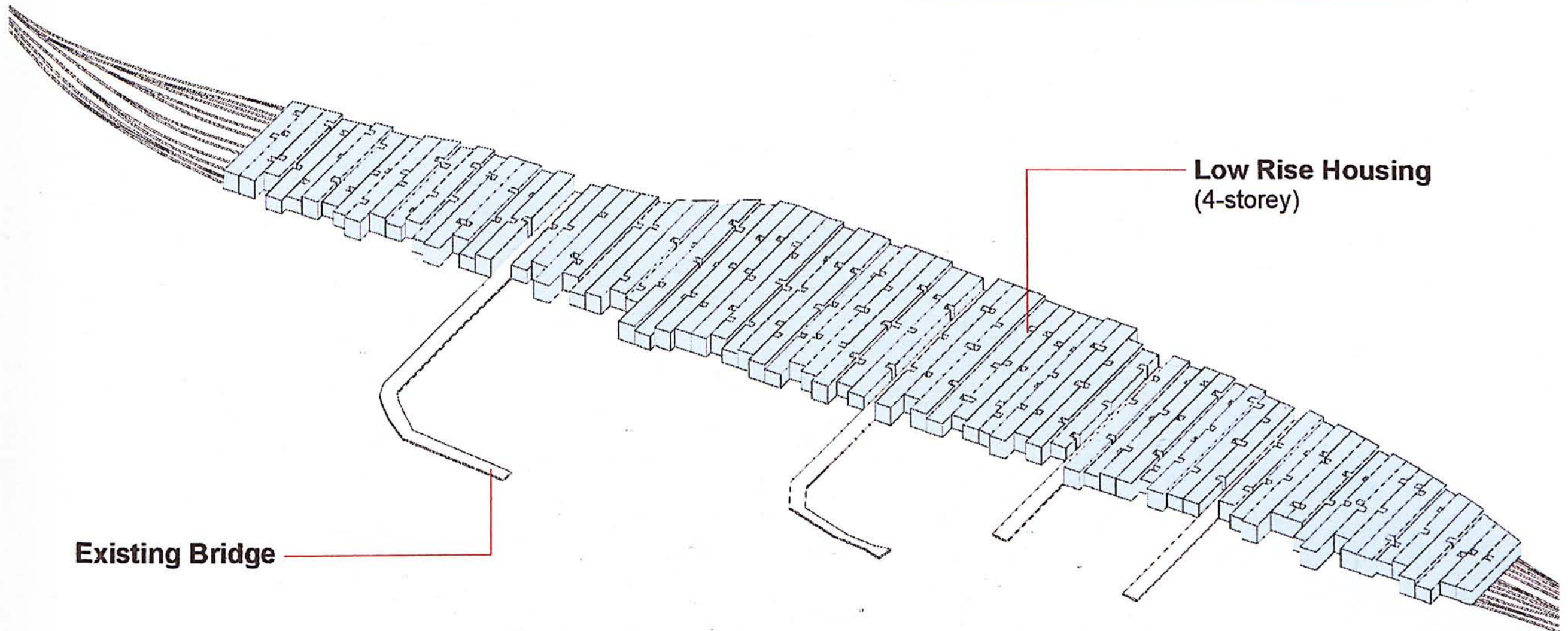
**99% Solid
1% Void**

void as Private Courtyard

no of units
Low Rise Hosuing **4000 units**

total **4000 units**

100 % of existing units



80% Solid
20% Void

void as Private Courtyard & Public Open Space

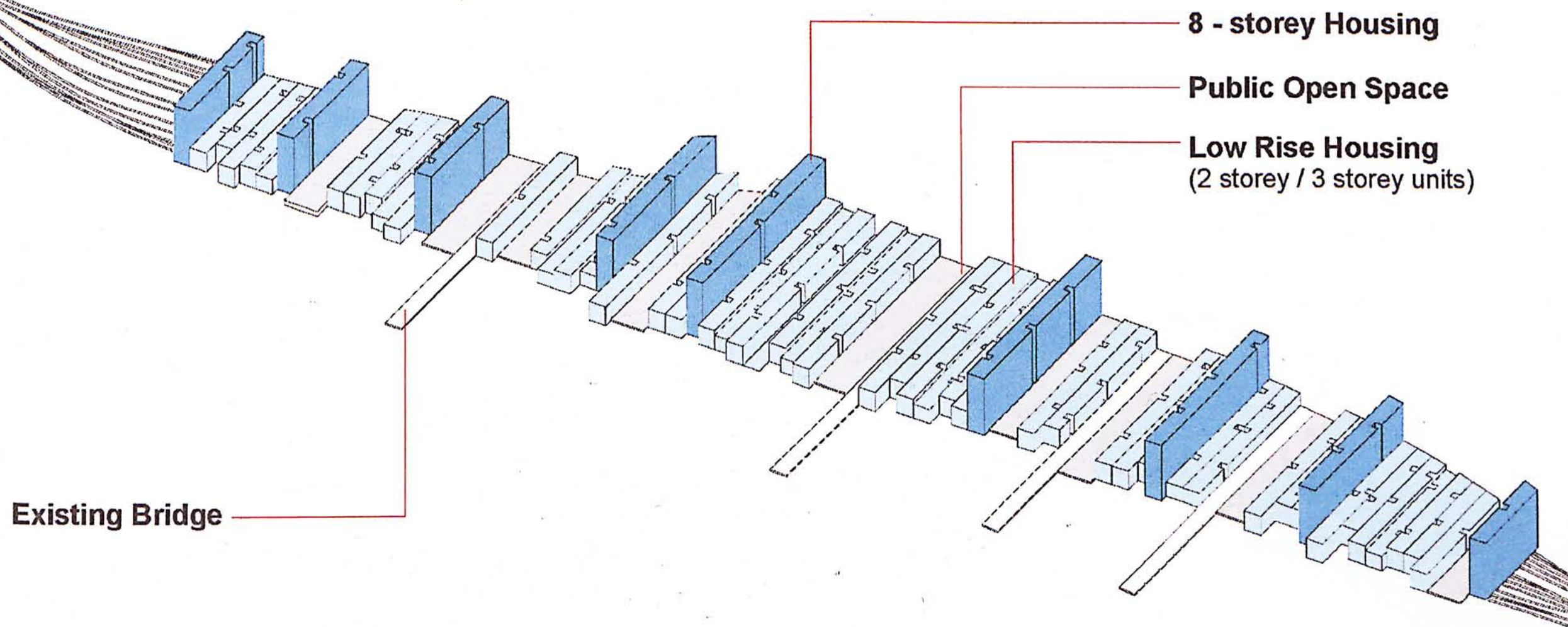
no of units

8-storey housing **1000 units**

Low Rise housing **3000 units**

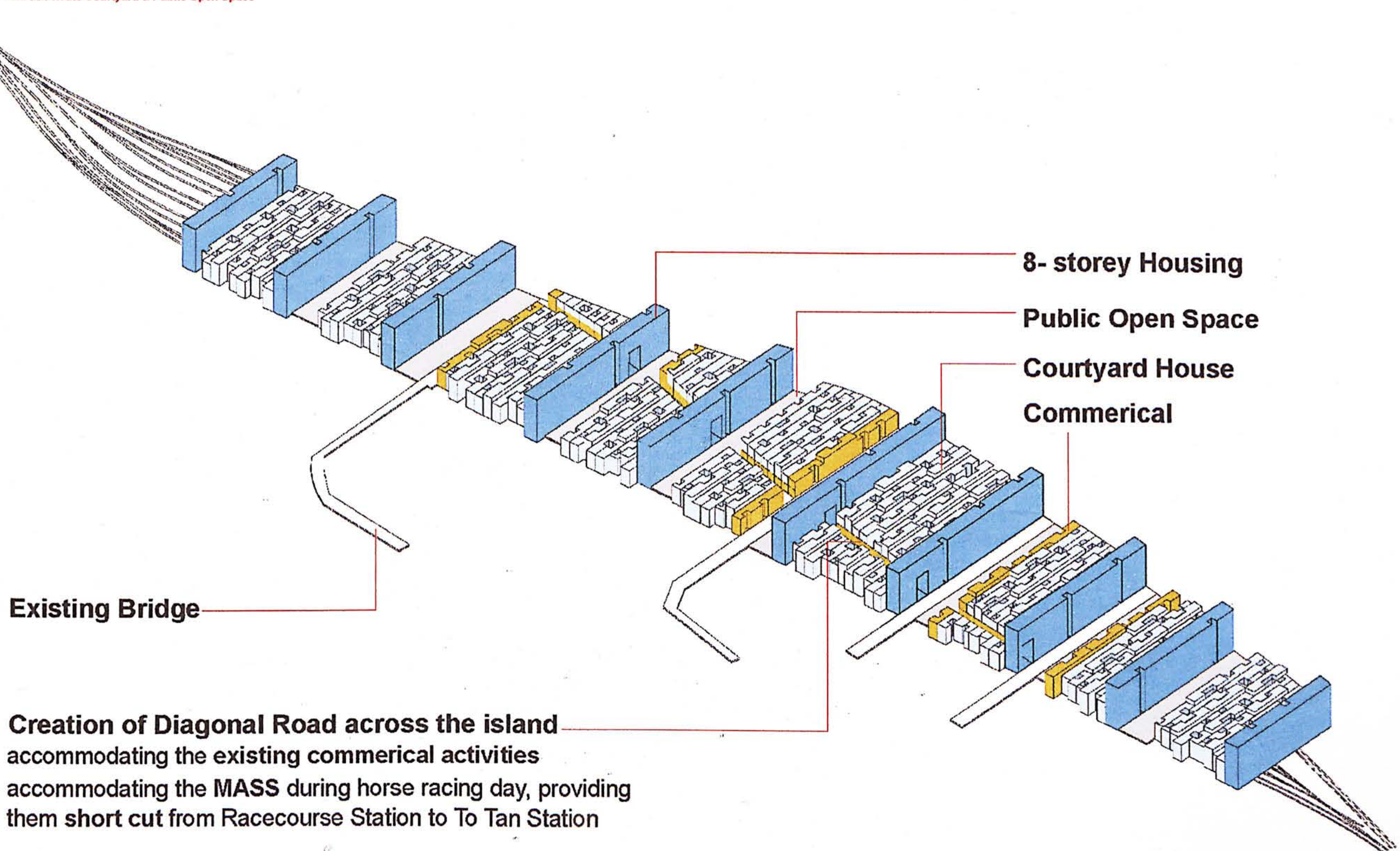
total **4000 units**

100 % of existing units



70% Solid
30% Void

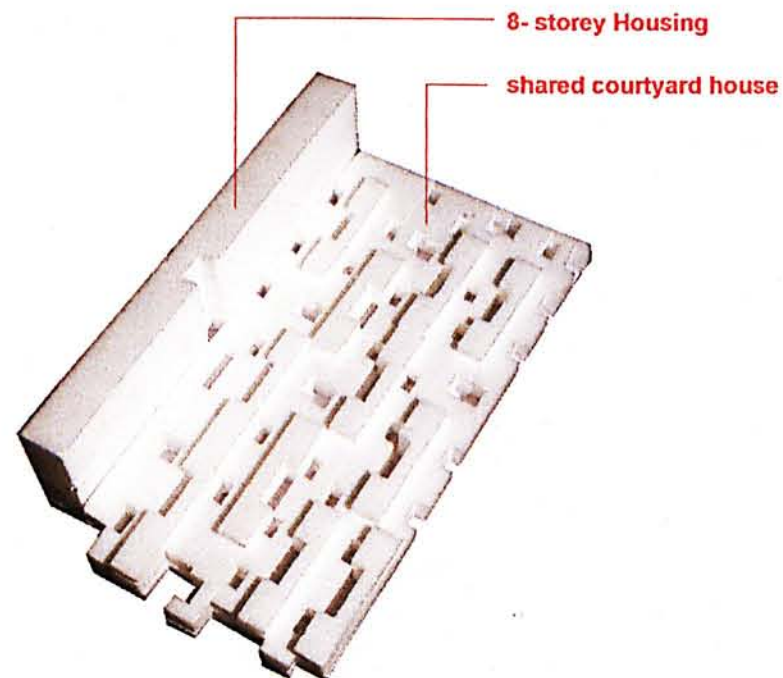
void as Private Courtyard & Public Open Space



Courtyard House Study 01

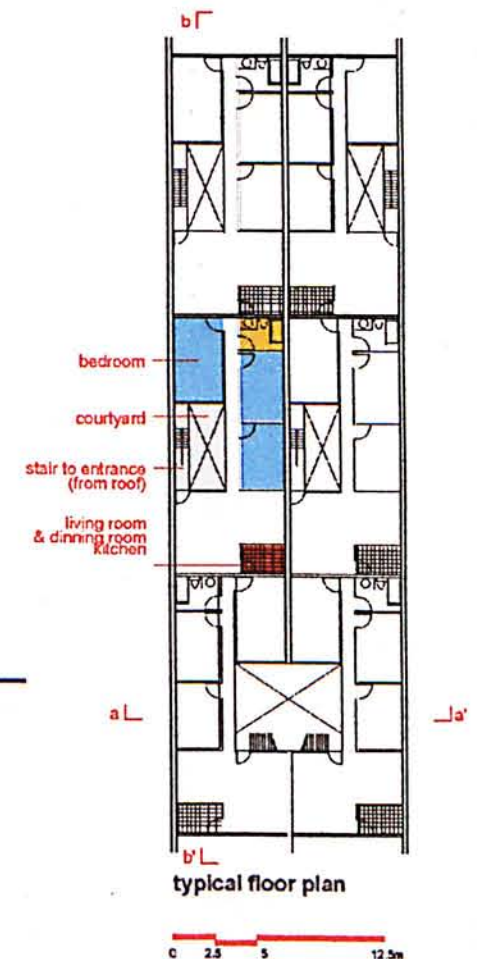
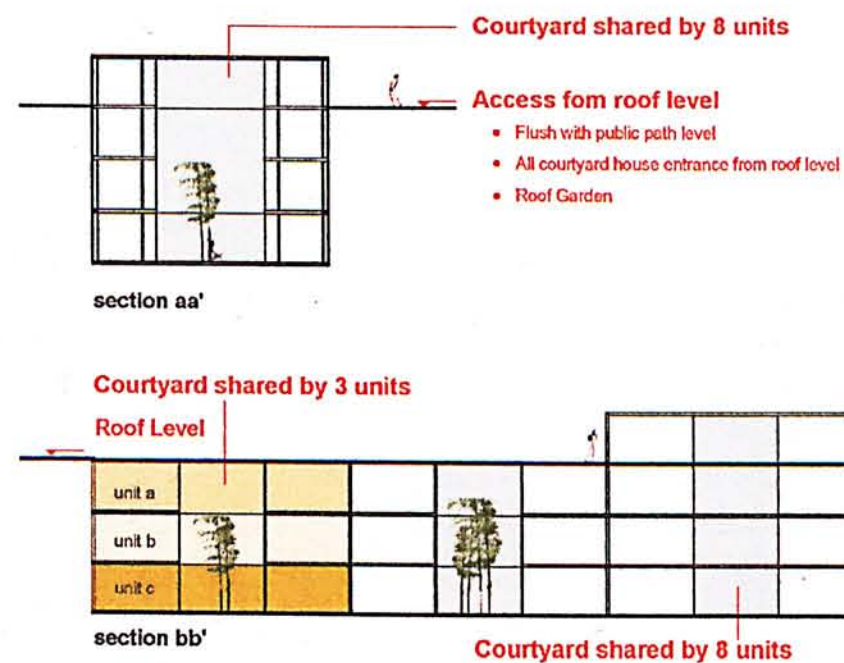
Courtyard House

3-storey / 4 - Storey
Shard courtyard



no of units	
8-storey housing	1000 units
courtyard house	1967 units
total	2967 units

75 % of existing units

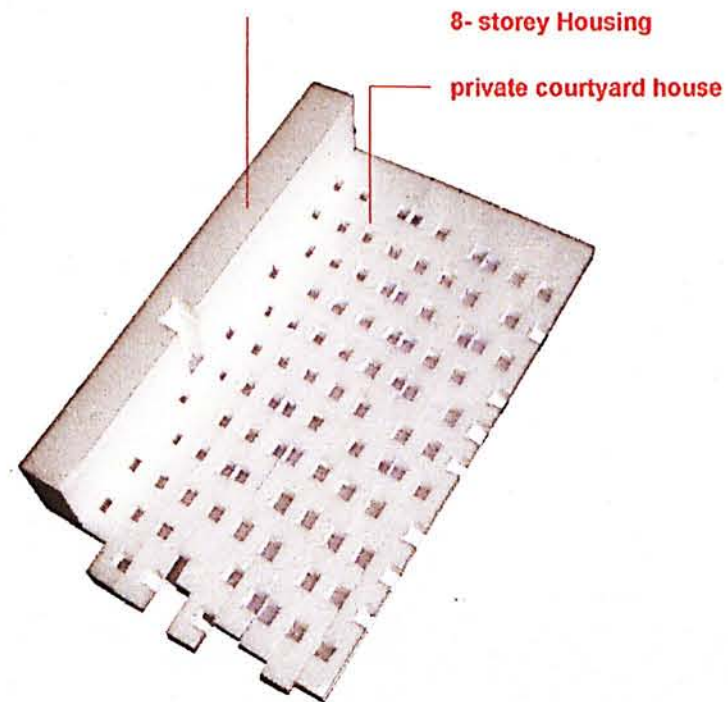


Courtyard House Study 02

Courtyard House

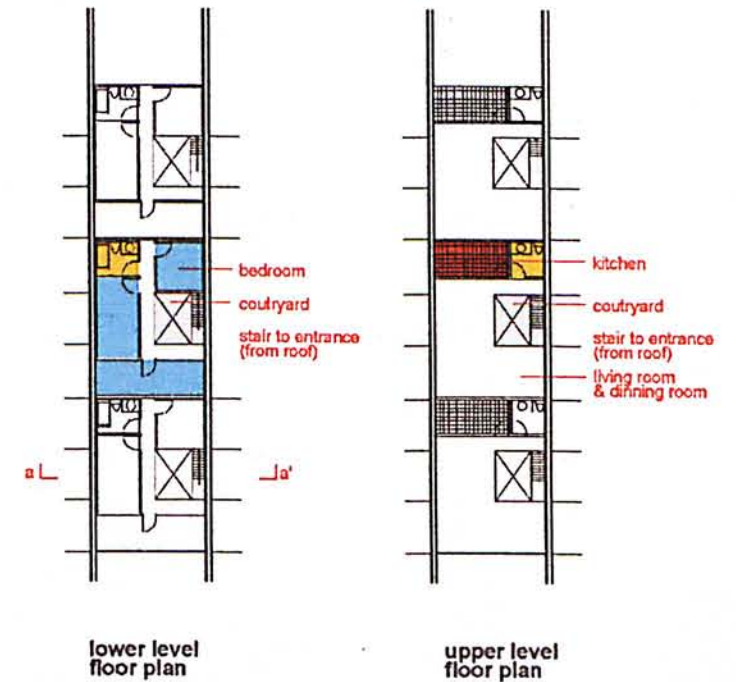
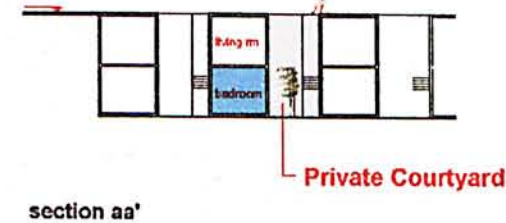
Duplex Unit
Private courtyard

no of units	
8-storey housing	1000 units
courtyard house	1209 units
total	2209 units
55 % of existing units	



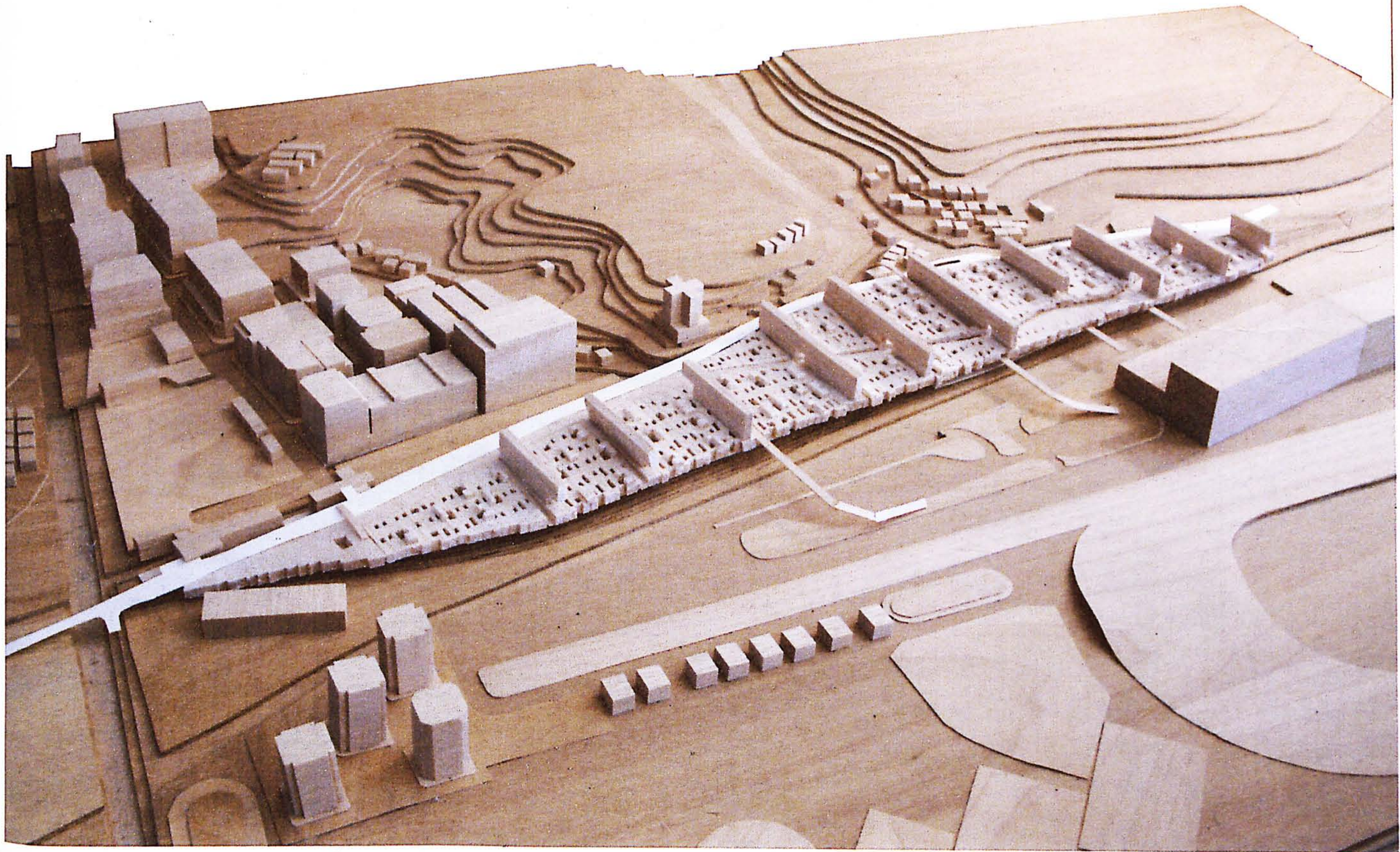
Access from roof level

- Flush with public path level
- All courtyard house entrance from roof level
- Roof Garden



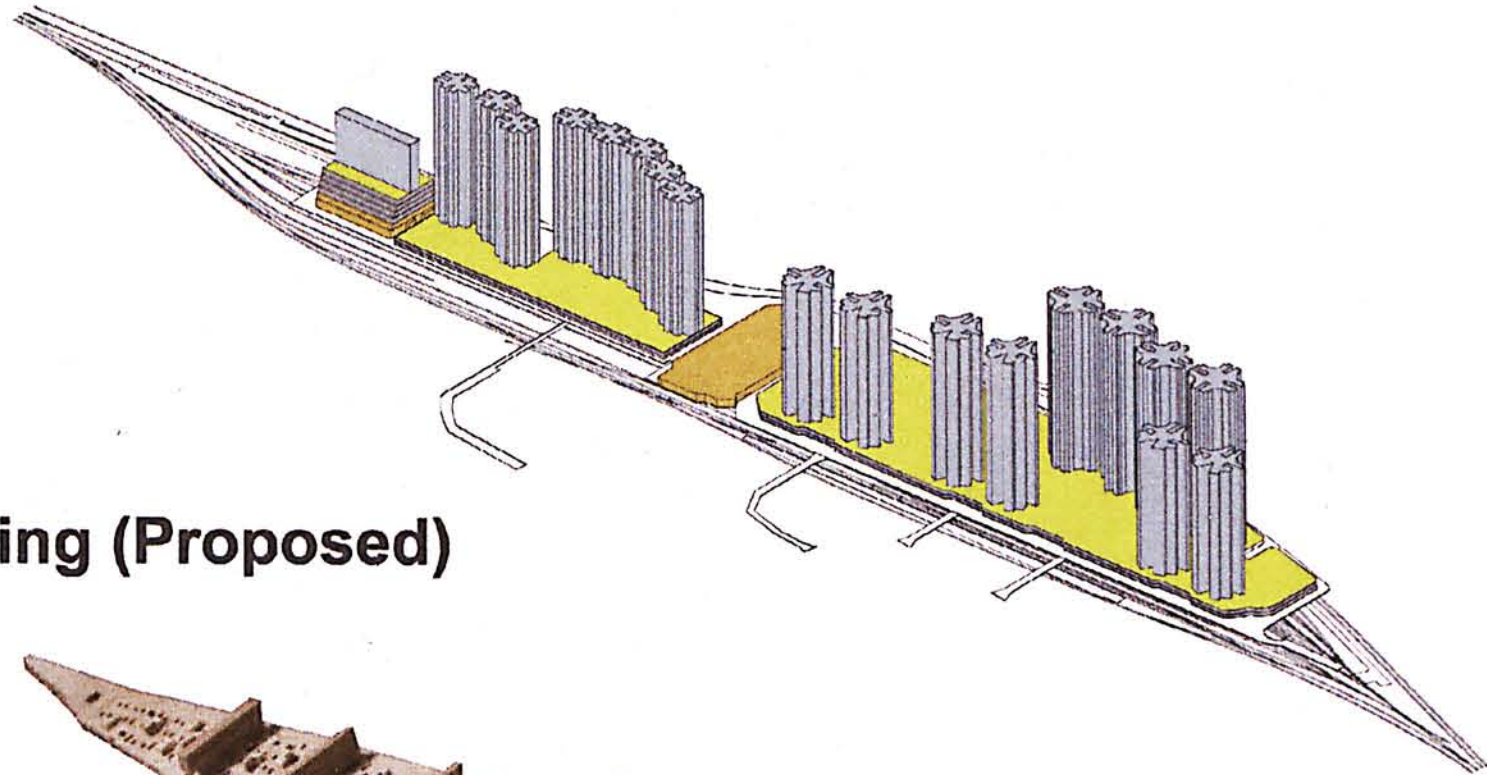
0 2.5 5 12.5m

[03] - the final design



Open Space Organization

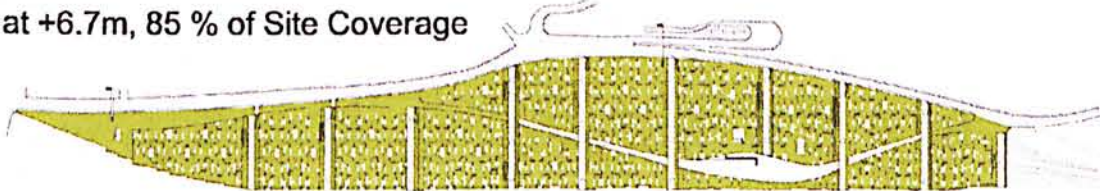
- **Tower Housing (Existing)**
Green Area = 71675 sq meter
= 60 % Site Coverage



- **Courtyard Housing & Slab Housing (Proposed)**
Green Area = 113875 sq meter
= **120%** Site Coverage

Green space organized in 3 levels

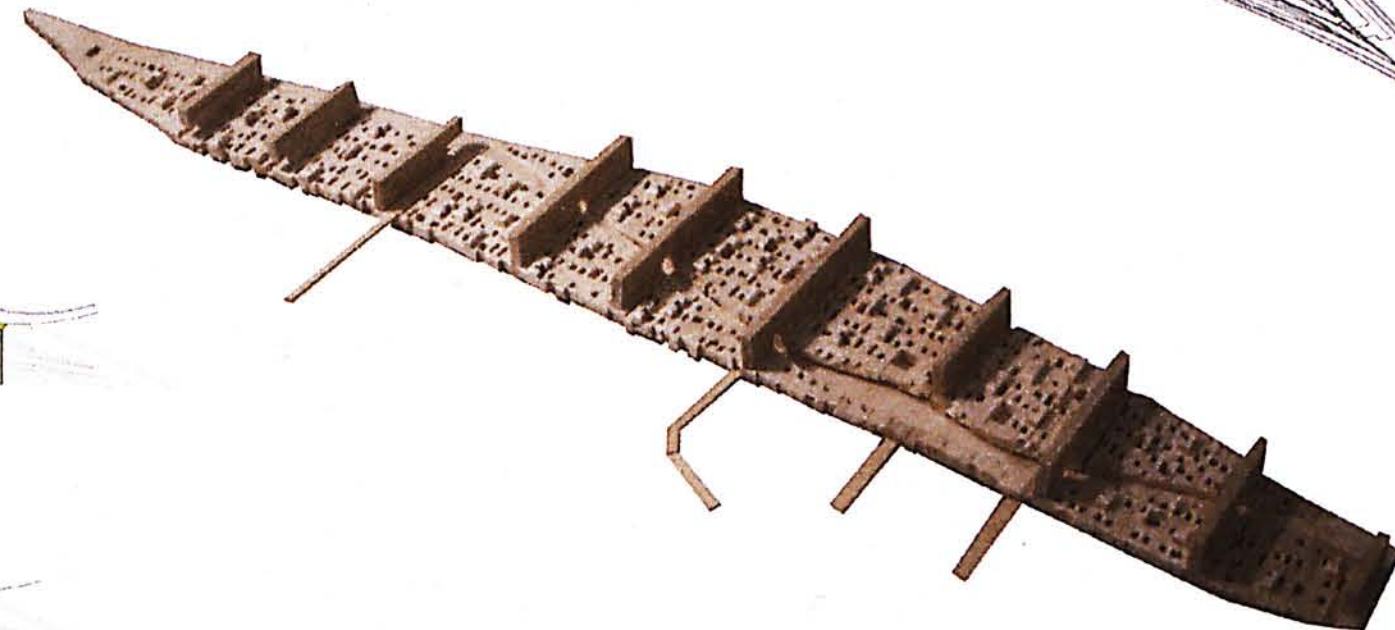
at +6.7m, 85 % of Site Coverage



at +3.7m, 5 % of Site Coverage



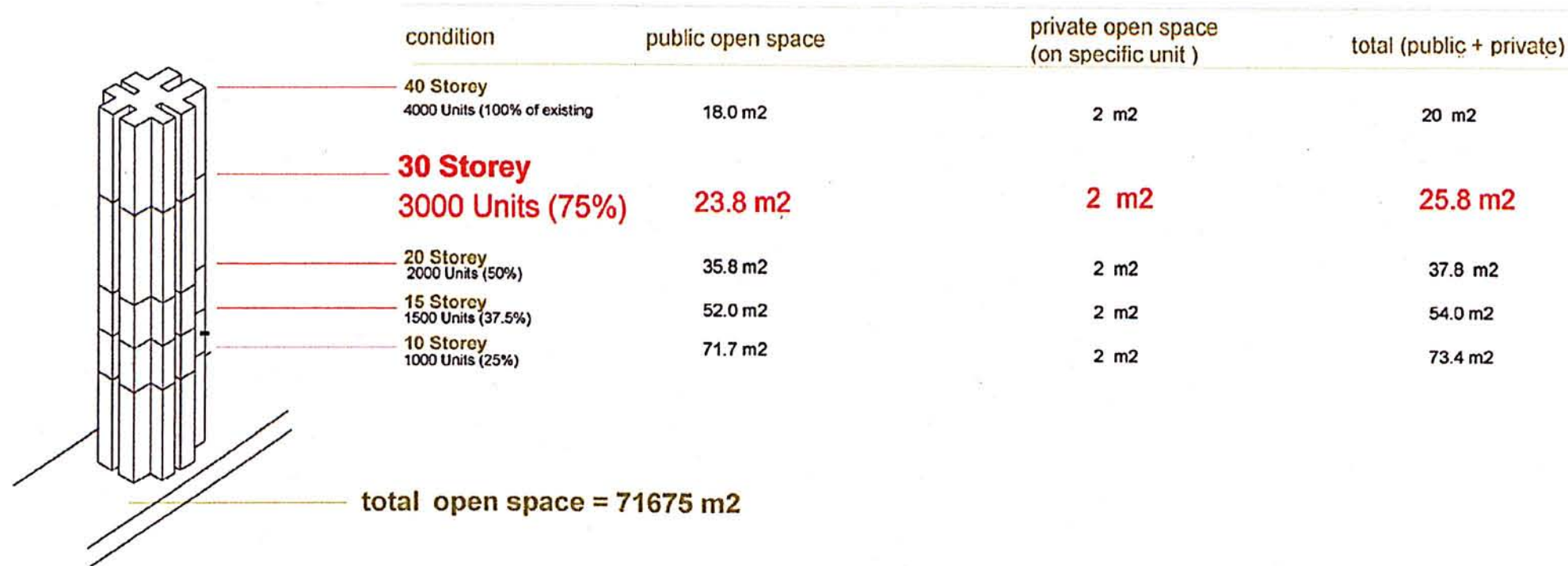
at +0.0m, 30% of Site Coverage



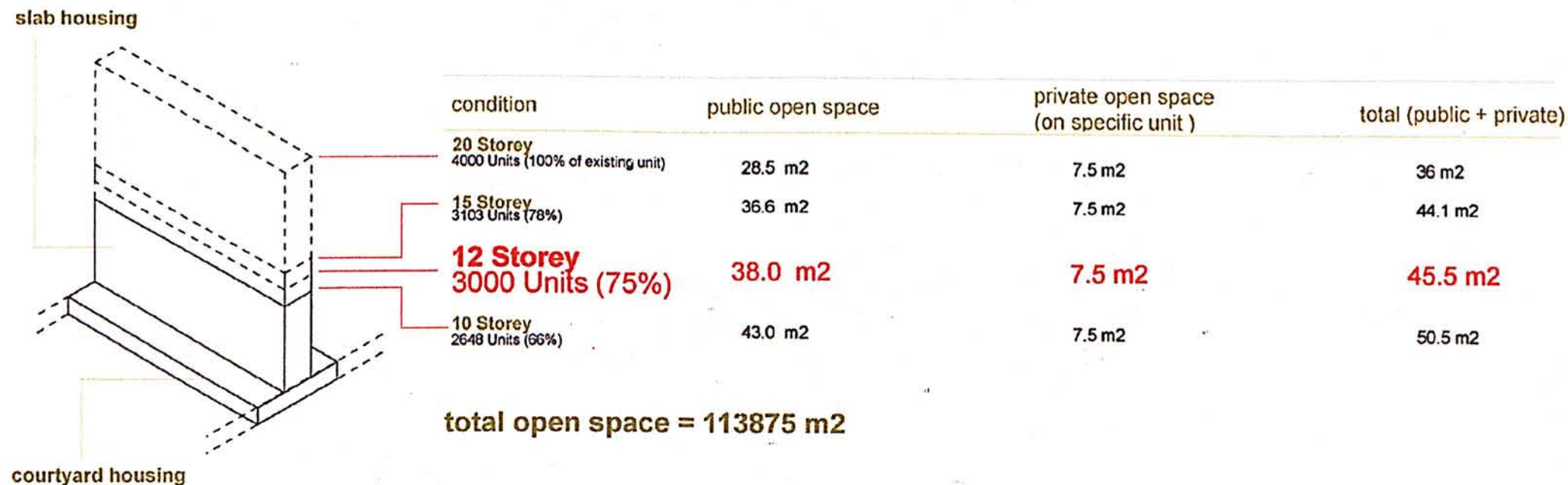
total Green Space = 85% + 5% + 30 % = 120 % of site coverage

Open Space Per Unit

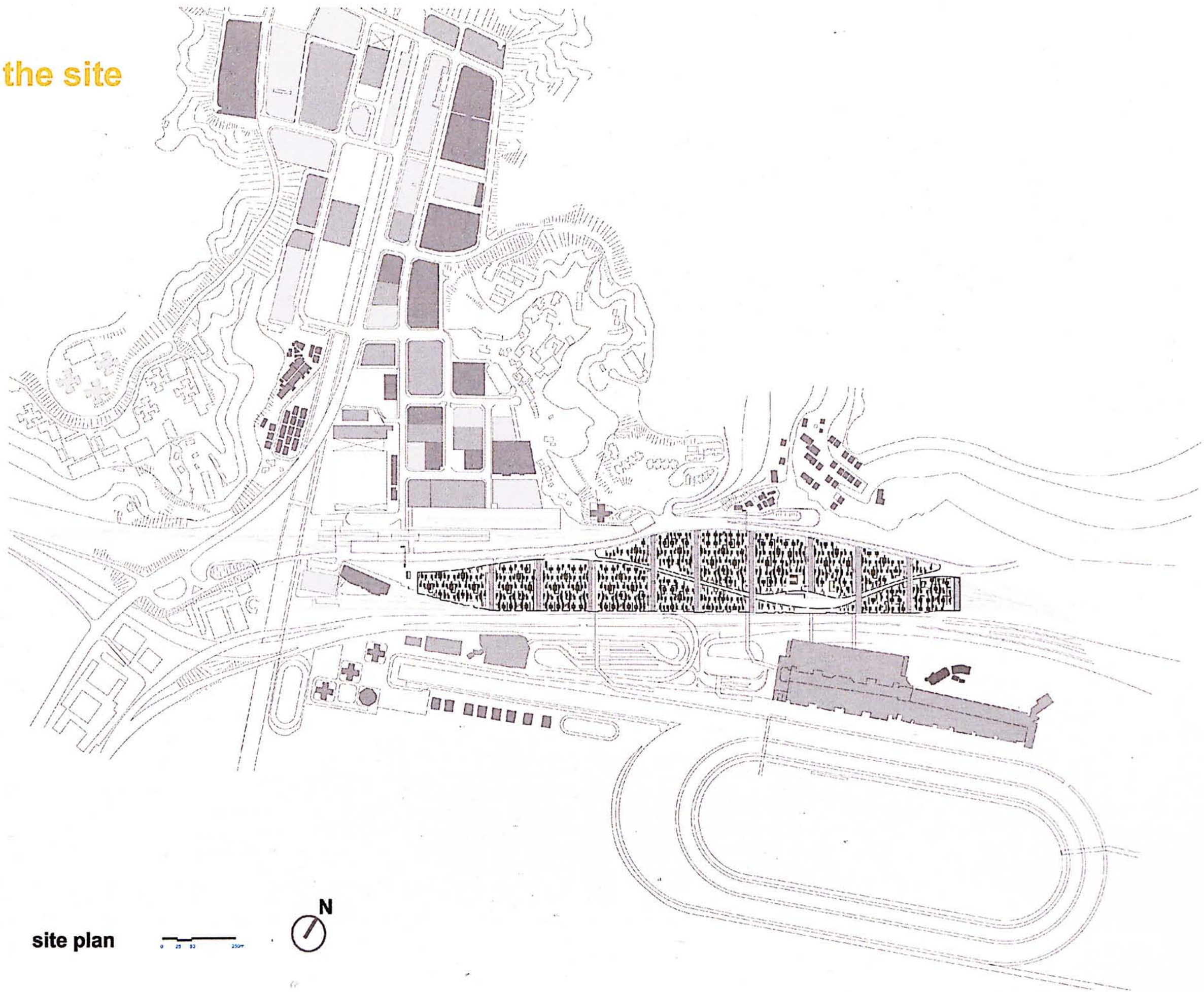
● Tower Housing (Existing)



● Courtyard Housing & Slab Housing (proposed)

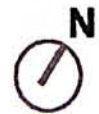


the site



site plan

0 25 50 250m



Landscape Approach - open up the mountain to the public

Existing Situation



Proposed Situation



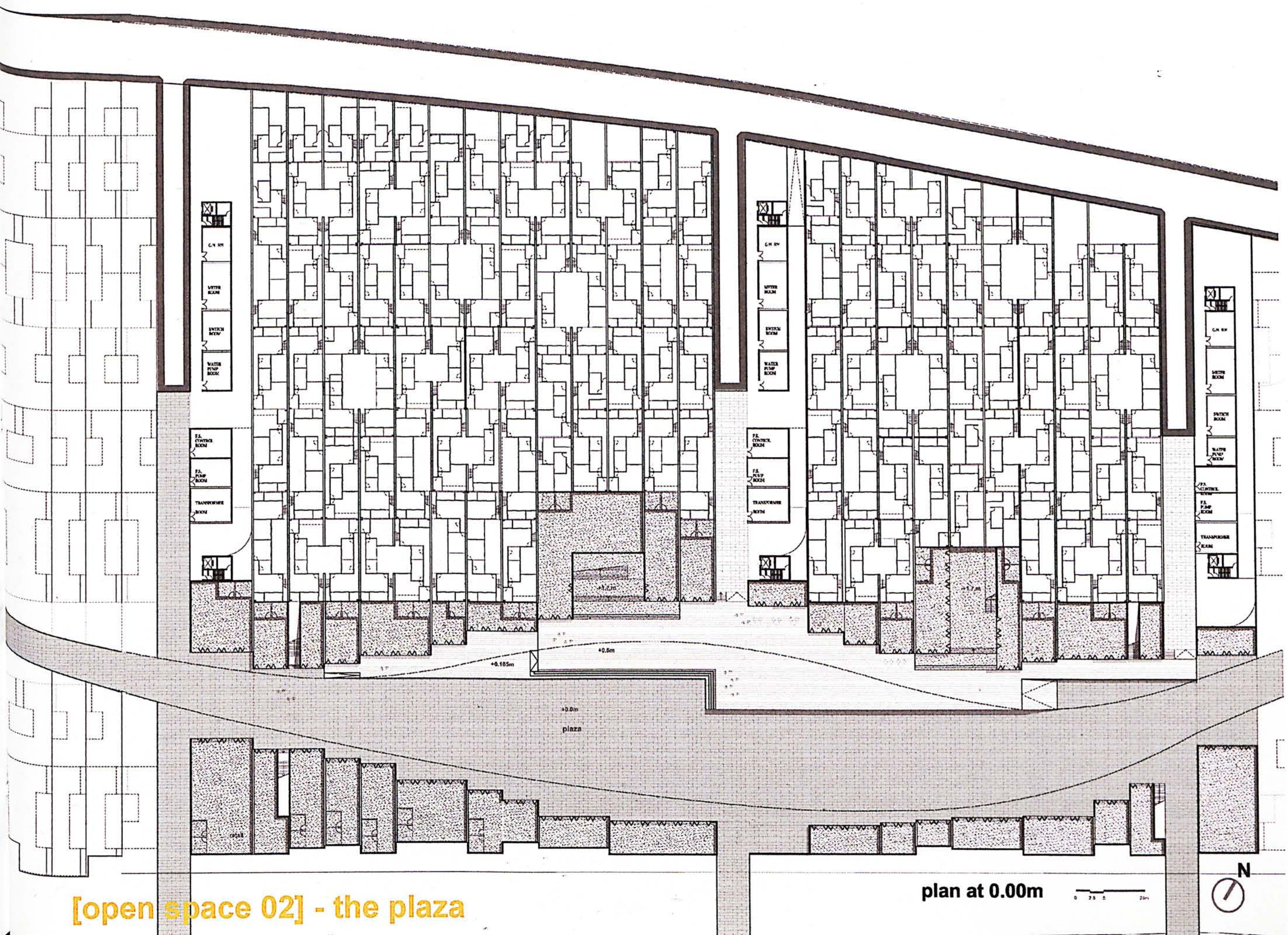


[open space 01] - the roof garden

plan at 6.70m

0 2.5 5 25m



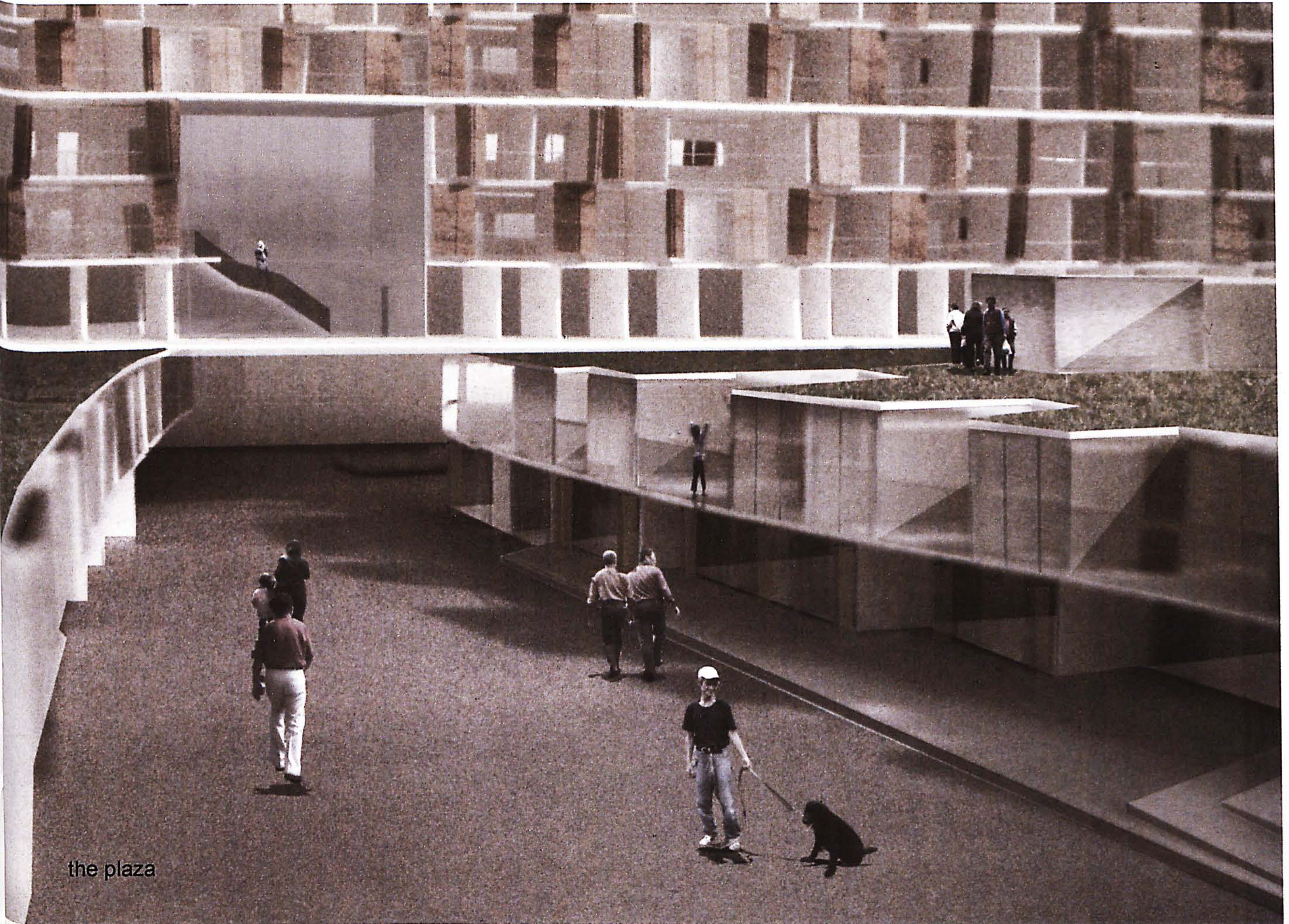


[open space 02] - the plaza

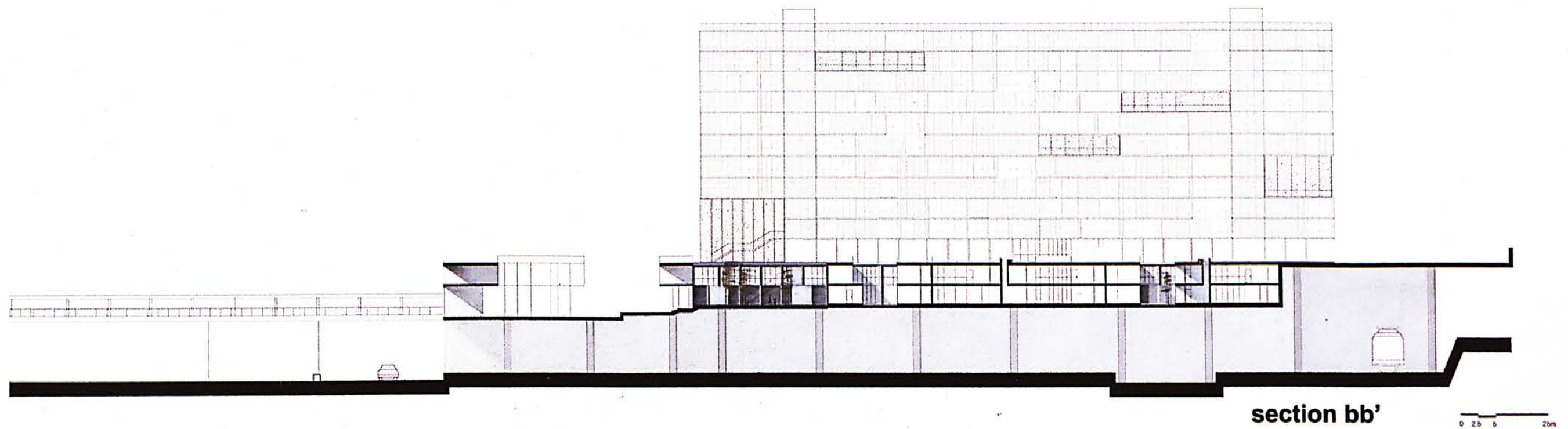
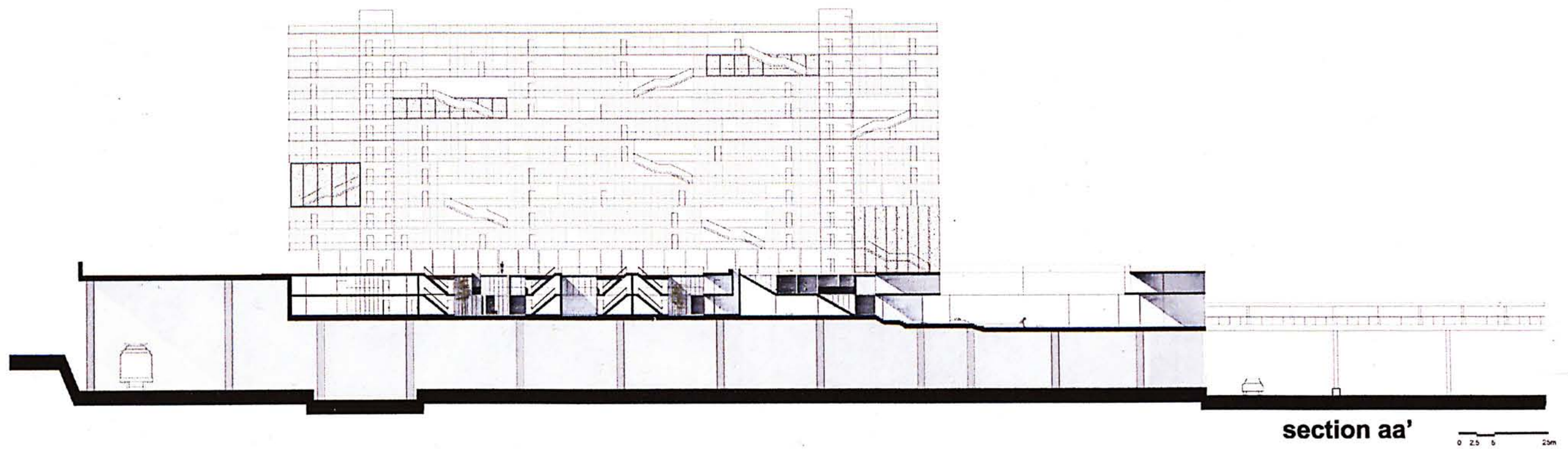
plan at 0.00m

0 2.5 5 20m



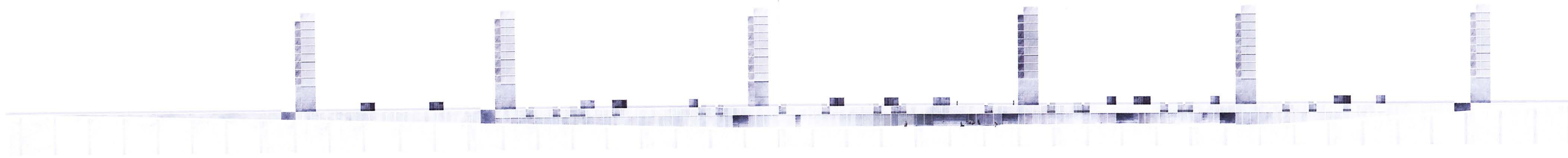


the plaza

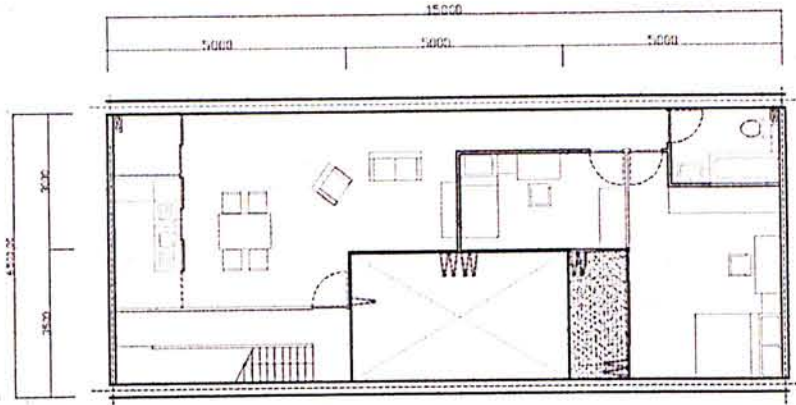


[open space 03] - the commerical courtyard

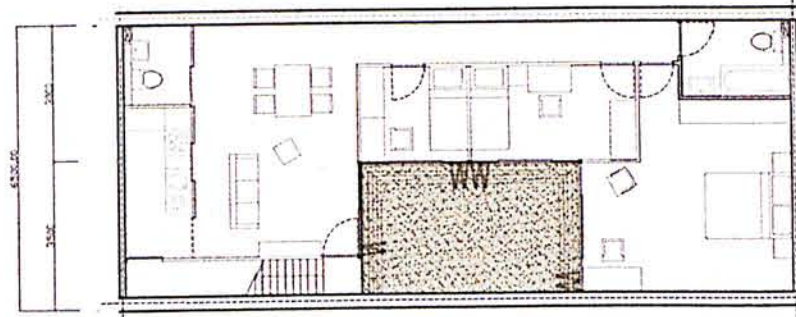
elevation along the diagonal road and the plaza



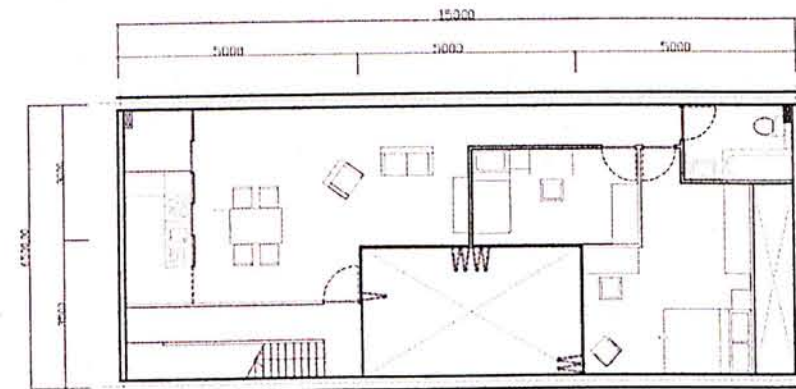
Open space 041 - the private courtyard



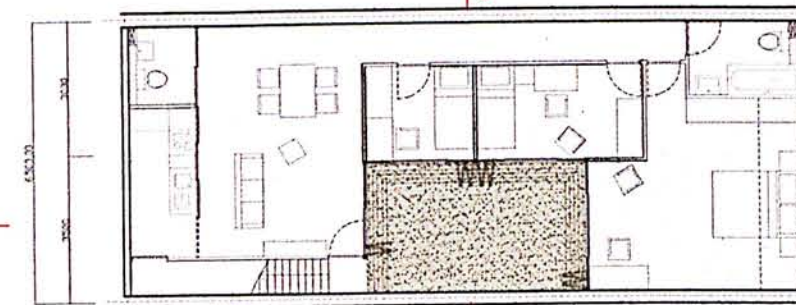
Type A1
3 BR + balcony
(75 m2 , First Floor)



Type A2
3 BR + shard courtyard
(82.5 m2 , Ground Floor)

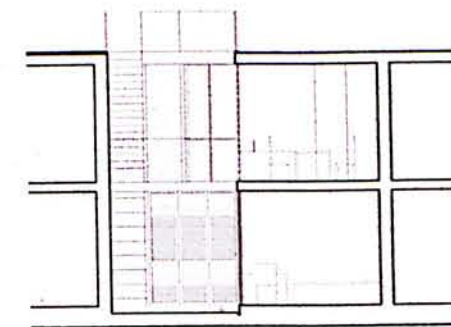
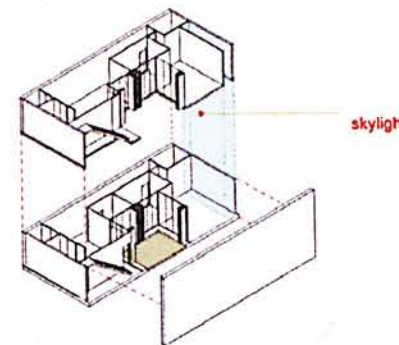
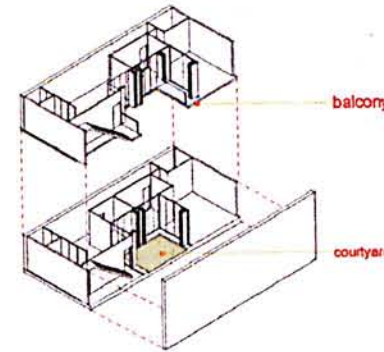


Type B1
2 BR
(65 m2 , First Floor)

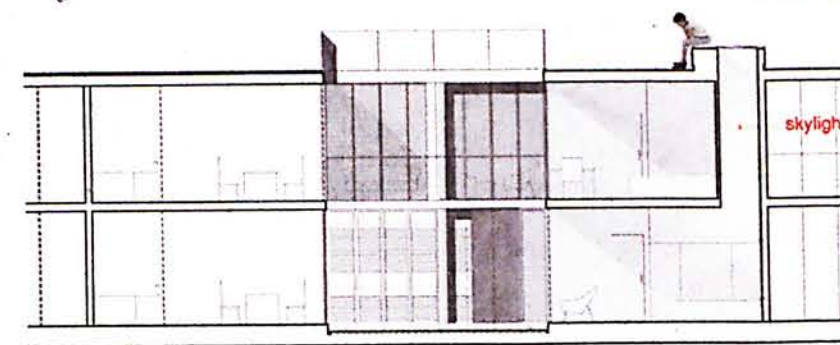


Type B2
3 BR + skylight+ shard courtyard
(82.5 m2 , Ground Floor)

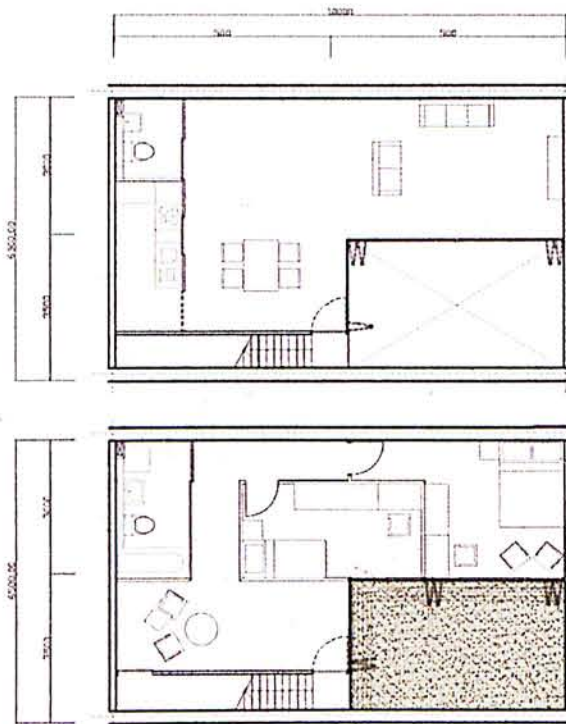
UNIT
The Courtyard Housing



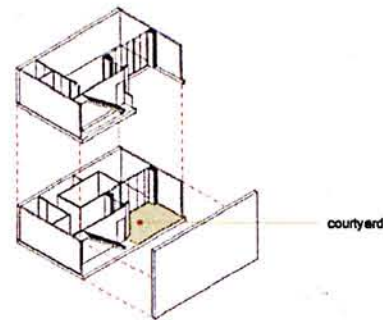
section aa



section bb



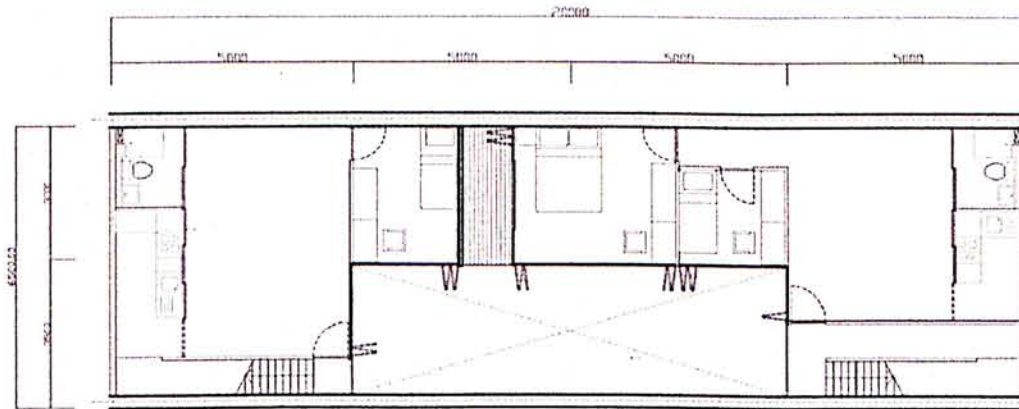
Type C
duplex + private courtyard
(90 m²)



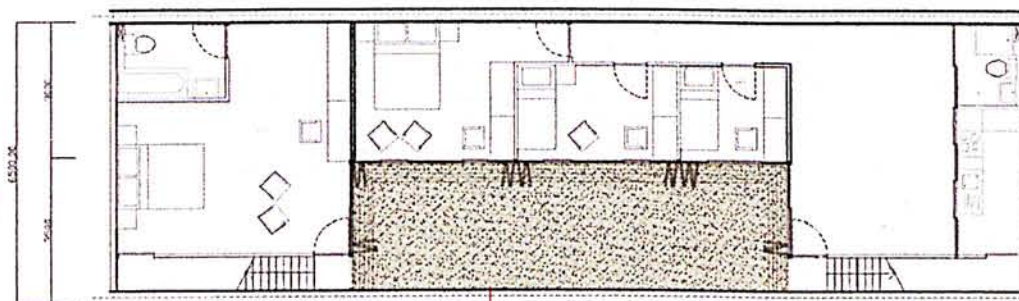
Variation of Units

combining four Type C - variation according to the location of partition

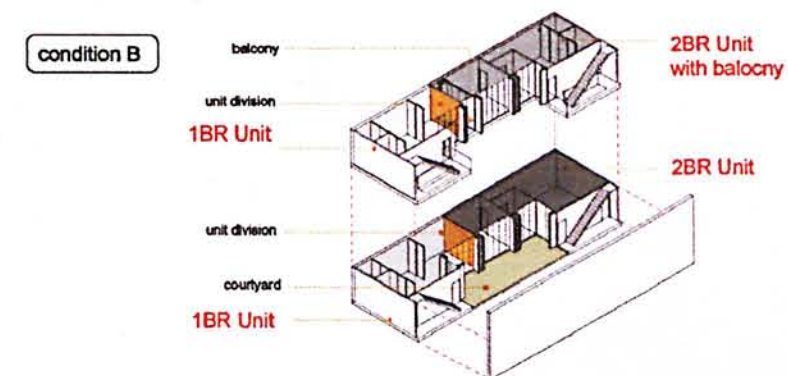
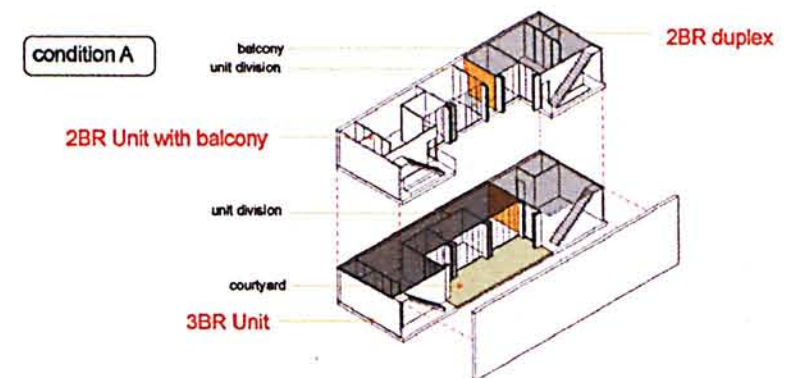
Type D1
2BR duplex
(65 m²)

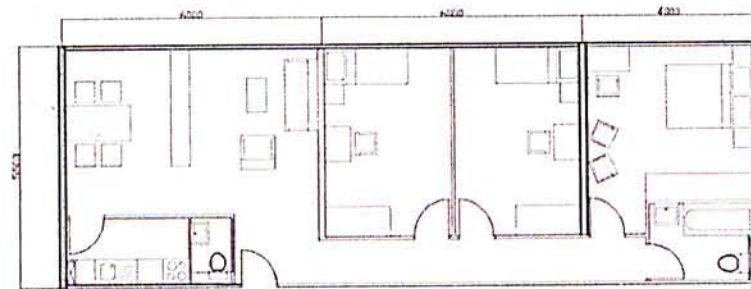


Type D2
2BR + balcony
(60 m²)

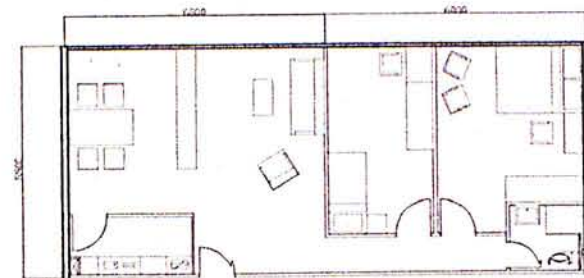


Type D3
3BR + shared courtyard
(75 m²)

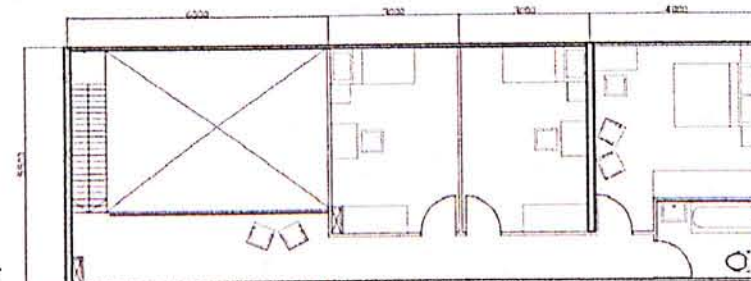




Type 1
3 BR
(88 m²)

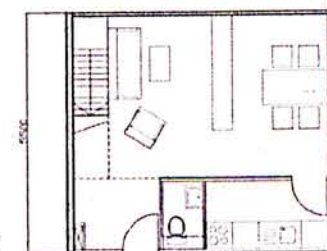


Type 2
2 BR
(70 m²)

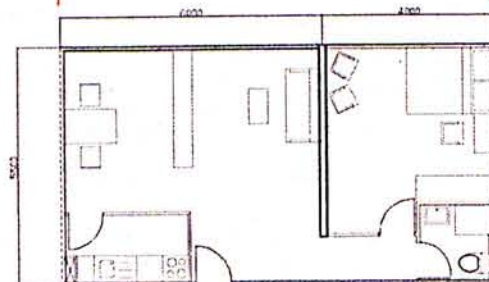


Type 3
3 BR Duplex
(88m²)

upper floor



lower floor



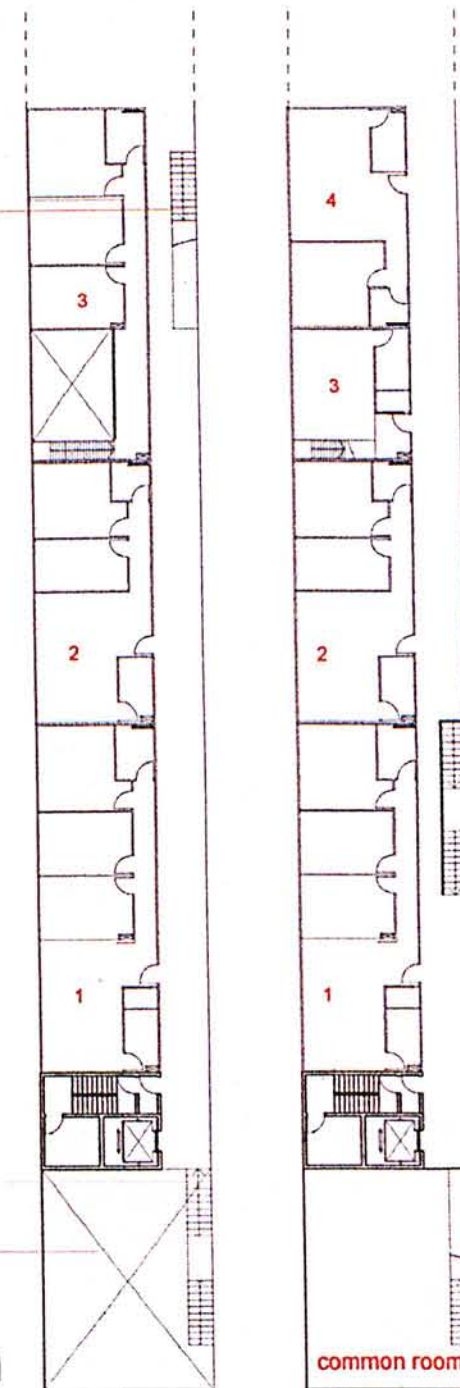
Type 4
1 BR
(55 m²)

scale 1:50

UNIT

The Slab Housing

stair
connecting floor to floor



The Combination

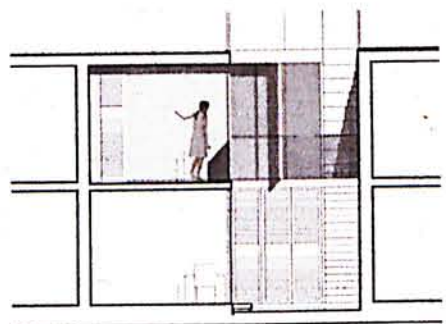
upper floor

lower Floor

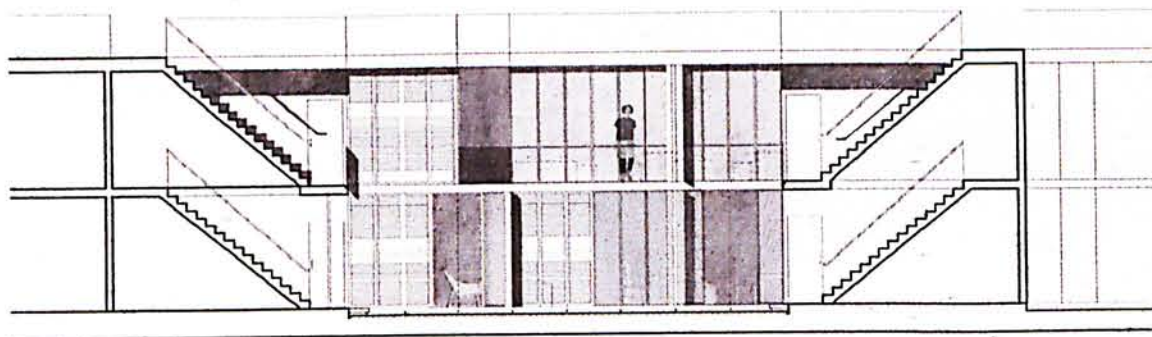
common room

scale 1:100

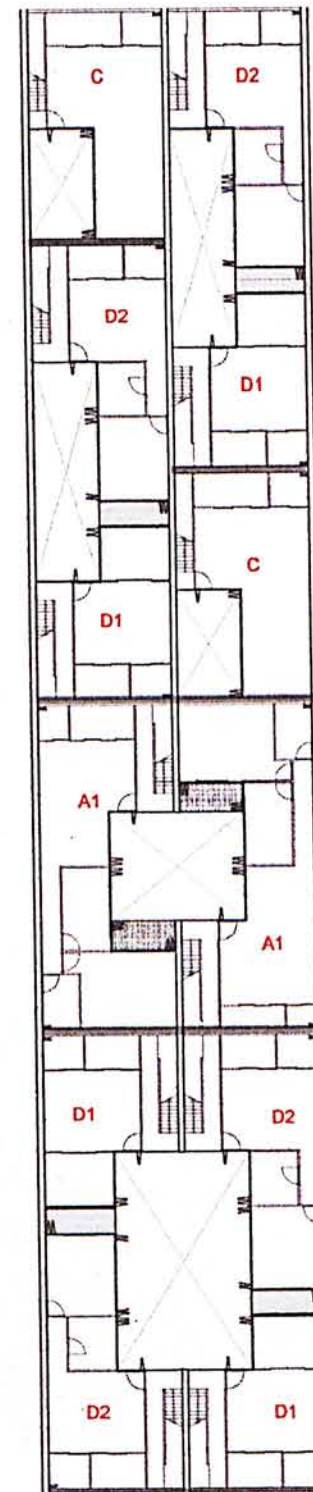
The Combination Formation of Large Courtyard



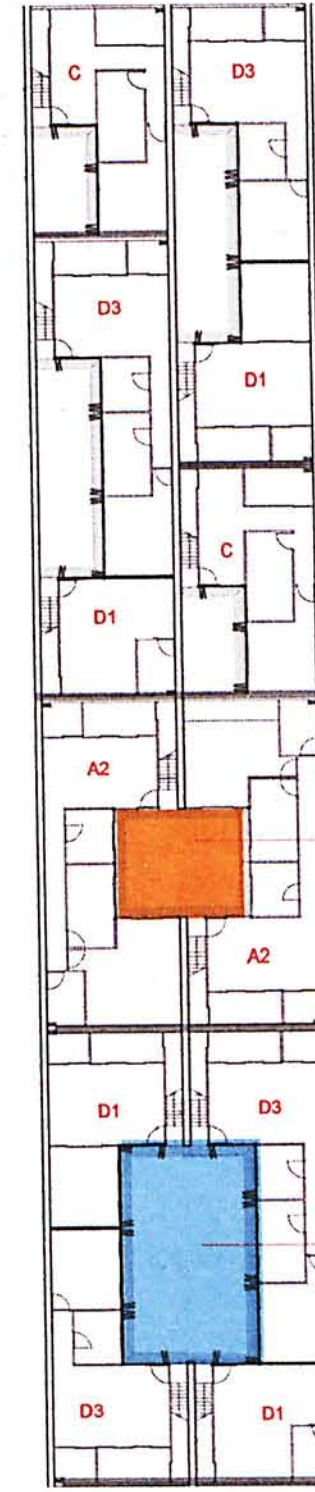
section cc



section dd
scale 1:50



First Floor



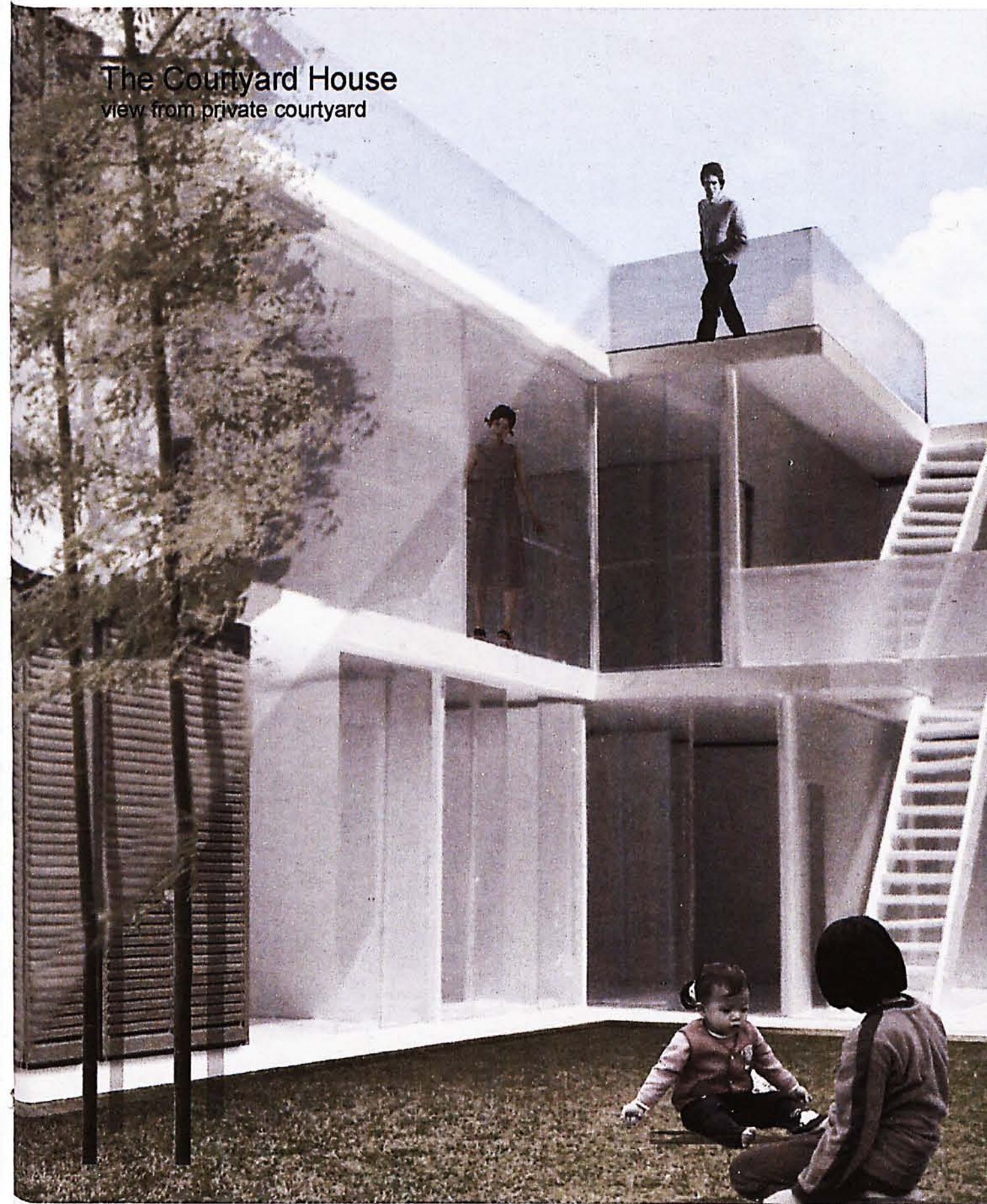
Ground Floor

shared by 4 units

shared by 8 units

scale 1:100

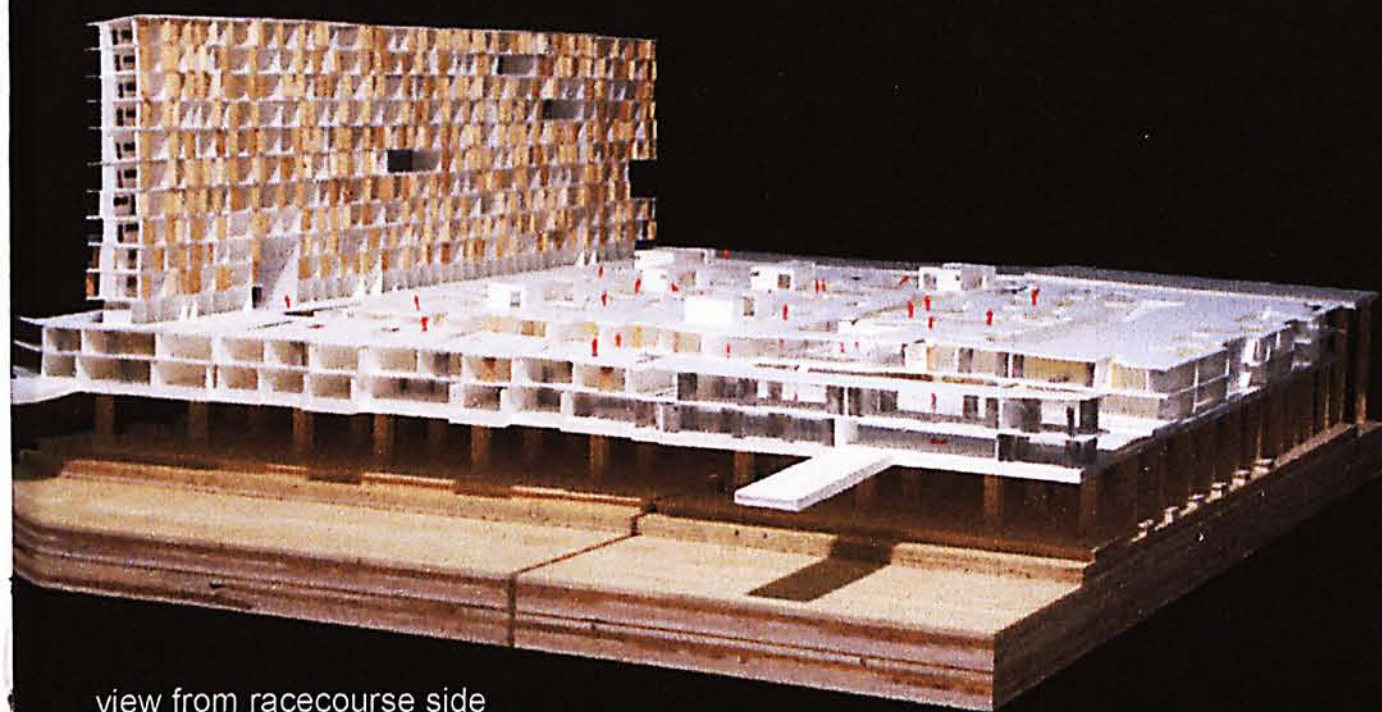
The Courtyard House
view from private courtyard



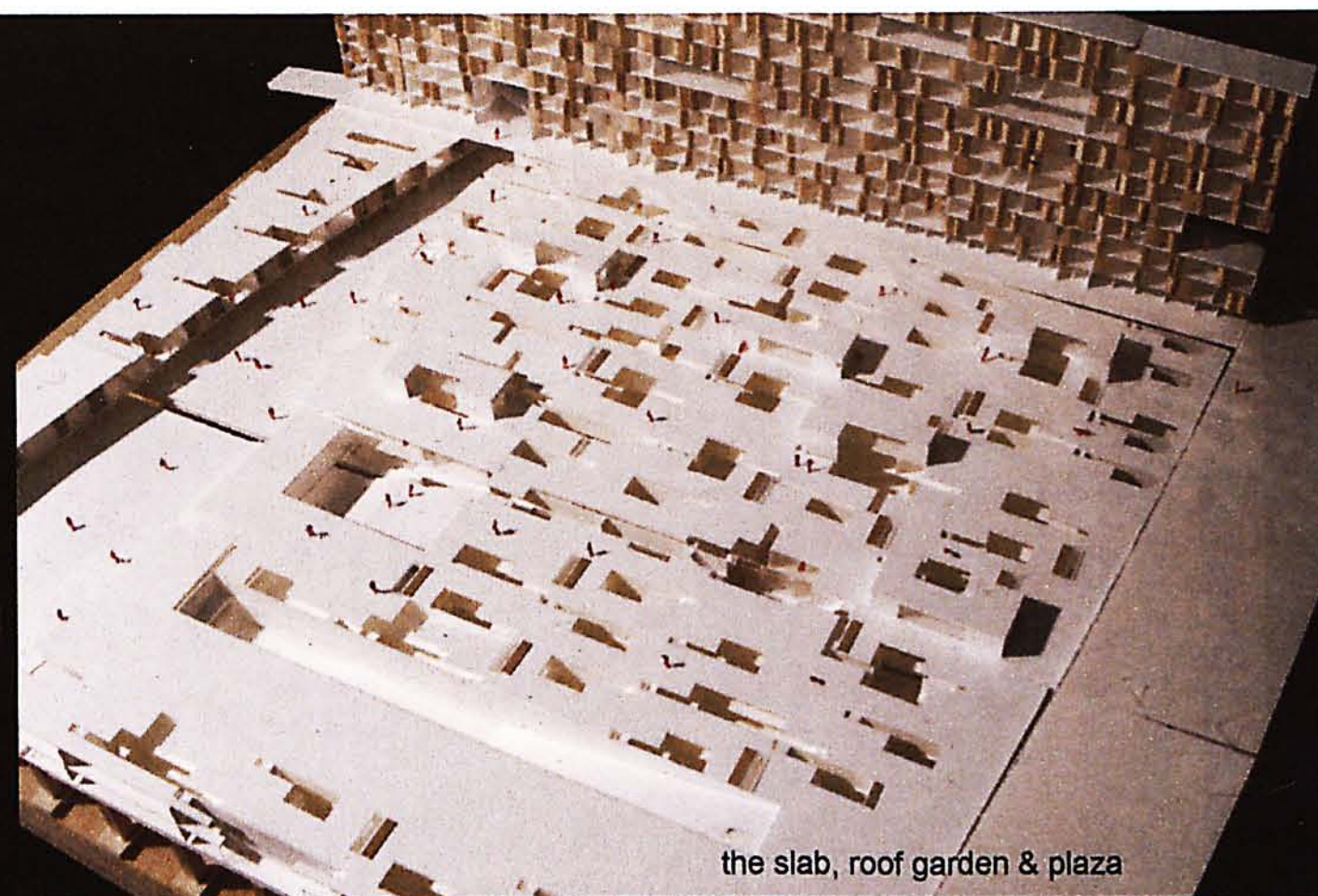
view to private courtyard



1:200 model showing one district



view from racecourse side



the slab, roof garden & plaza



retail & unit facing racecourse side



units along the plaza

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